



LEARNING TO **DRIVE SAFELY**

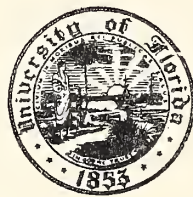


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LEARNING TO DRIVE SAFELY

by

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A. R. Lauer

A Text-Manual and Guide to the Science of Driving
Instruction with Suggestions for Training Areas and
Evaluation Techniques for Courses in High Schools,
Colleges, and Teacher Training Institutions

FOREWORD

WHAT DOES SAFETY MEAN?*

"A very bright young woman writing for a New York paper recently described the word SAFETY and all it stands for. She said that the advance of civilization is pretty much written in the willingness to "take chances" and consigns organized safety efforts to the outer darkness as defeating that purpose.

The only trouble, of course, with this smart young woman was that she hadn't taken the trouble to check into the true nature of the accident-prevention movement. If she had done this, her story would have been something quite different.

There is nothing in the safety credo that tells you not to take chances. It recognizes that ours is essentially a dangerous age when it is utterly out of the question to avoid all chance-taking. We couldn't fight a war or live at peace without chances.

But what it is concerned with is the taking of needless chances and inviting needless sacrifices.

When the order goes out for a night bomber raid on Berlin, there is full recognition that it's a hazardous mission. Those in charge know that there will be flak and they count on opposition from enemy night fighters.

Those are perils that just have to be accepted. But there are many things that can be done to lessen the perils; such things as speed and dependability of motors, thickness of armor, provisions for oxygen, good parachutes, ample training for pilots and crew, etc. All of these precautions are taken to the full limit of ability. Nothing that isn't inherently a matter of chance is left to chance.

Under the concept portrayed by the smart young New York Newspaper woman, an adherence to the gospel of safety would preclude such bombing missions over Berlin. But, of course, that isn't what happens at all.

The example cited here can be parallel on the home-front -- on the highways, in factories, in the home. Safety never says: "Don't do something that needs doing." Rather, it says: "Do it, but do it in the most prudent manner possible so you'll be on hand to do it again sometime."

* Featured editorial in Public Safety written by W. Earl Hall, Managing Editor of the Mason City Globe Gazette. Mr. Hall, former president of the Iowa State Safety Council, and a member of the State Board of Education, is an ardent supporter of safety education in all its phases. He has been honored several times by awards for best editorials on safety.

7-19-49 - Stachert - Sociology

THE AUTHOR'S PREFACE

Driver education and driver training have proved themselves in every test made. Prior to the war a large number of high schools pioneered in this training. During the period of mobilization it was found that the driving habits and practices learned by civilians were faulty and inadequate for military efficiency. Special driving schools were set up to correct the above faults since only a small percentage of recruits had had the advantage of such training.

Among the most meritorious efforts were those carried on by the Women's Army Corps. In Des Moines, Iowa the Corps received a special award for 1,500,000 miles of traffic driving without an accident.

As a result, through the combined efforts of schools and outside agencies, the fatal accident toll in the United States has gradually been decreased each year from around 40,000 in 1941 to 32,300 in 1947. At the same time, there are about 6,000,000 more motor vehicles on the highways and mileage, as well as prevailing speeds, is up to some extent.

This manual is the result of twenty years' study of drivers' aptitudes, habits, abilities, and disabilities, in addition to ten years' experience in teaching drivers and instructors of driving at Iowa State College. Every step outlined has been carefully tested and evaluated for difficulty, order of presentation, and usefulness in the laboratory of educational expediency. We refer to all phases of instruction covered in this Manual as driving since we combine classroom instruction with behind-the-wheel training.

TO DRIVING INSTRUCTORS: - Each instructor should master the separate sections of the Manual thoroughly, covering every paragraph. Some of the instruction is directed to the student of driving, but the instructor should be fully cognizant of what the former is supposed to know in order to properly check progress of the class as a whole.

If any points are not clearly stated, be sure to satisfy yourself as to the facts in order that you may elaborate anything not sufficiently stressed, or anything which is otherwise unclear. Your own experience should be sufficient to supply the details in most cases, but constant study is necessary.

All beginning students of driving should be held responsible for the sections and parts given in the student's preface in order to properly understand the procedures and the instructional processes.

Since the Manual may be used for any length of course from ten lessons up, the separate units can be elaborated to fit the needs of the course being offered. It covers the critical points we have found most essential during ten years' experience with the AAA system of driving instruction. Certain modifications have been made to make the system usable in the situations we have met and references from standard texts may be selected to fit any system of instruction being used. The Manual follows a step by step approach to driving which develops students' knowledge, skill, confidence, and attitudes in a progressive manner.

TO STUDENTS OF DRIVING: - This Manual is designed to serve as a guide through the fundamental steps of driving in order to properly integrate the practical work behind the wheel with text book and outside readings necessary for a proper understanding of driving and successful driving experience.

While you are urged to read the entire Manual carefully, you will be expected to master the following sections which are of primary importance to beginning students of driving.

1. Foreword
2. Table of Contents
3. Section I - Acknowledgements
4. Section II - Introduction
5. Section III - General Objectives
6. Section IV - How to Use this Manual
7. Section V - Classification of Duties and Responsibilities
8. Section VI - Specific Precautions for Use of Dual-Control Cars
9. Section VIII - Points in Which One is Judged as a Driver
10. Section IX - Exercises for Developing Skill at the Wheel
11. The one-page topics preceding each unit and the answers to questions at the end of each unit are to be especially studied. The answers are to be written out on the perforated pages following the unit.
12. Section XII - Newer and Unusual Control Devices on Automobiles and Motorized Equipment.

Perusal of the various tests and training devices at the end of the Manual would be of interest to everyone learning to drive but are not stressed as musts for beginners.

November 22, 1948

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II. INTRODUCTION

Driver-training has become a highly specialized procedure, and is not to be confused with the ordinary haphazard methods of incidentally learning to "herd" a motor vehicle. Everything taught by trained instructors has a specific reason--backed up by reports of countless fatalities resulting from improper habits--and should be carried out precisely as described. There is ample room for each instructor with imagination to extend the training and make it more interesting, at the same time staying with the outline and fundamental points given in this Manual. It is intended for use as a guide both to instructors and to learners.

A driver training course may vary from a total of something under twenty clock-hours of instruction to perhaps fifty to one hundred clock-hours of instruction. The same order of procedure may be used for any reasonable length of course. It could easily be expanded to any number of hours of instruction by elaborating the assignment to give more practice in each of the fundamental operations. Our experience leads us to adopt the order of presentation given. There are certain things which must be mastered before others can be undertaken, such as proper manipulation of the controls before one can learn to park. Likewise, it is precarious to take students out for road driving before they can turn corners, place the car properly and maneuver with confidence.

There are certain minimum essentials which every driver must know if, and when, he is given full charge and responsibility for operating a motor vehicle. These include matters pertaining to the care of tires, radiator, lubrication, the electrical system, gasoline economy, smooth operation, insurance, accident reporting, road laws and traffic ordinances, and general operation of the car. We have found it expedient to group these items together logically and present a part of each one at the beginning of the driving period into which it best fits. Every learner is expected to master these minimum essentials. They are points which often mean the difference between safe and unsafe operation of a motor vehicle. The instructor prepares a short outline to cover about twenty minutes of discussion during which the various items are systematically presented and explained. They are too important to be left to chance learning or to incidental learning by the beginner.

It has been difficult to obtain text-book materials which dovetail into the order of presentation. Consequently, the assignments have been chosen from selected sources and are the best that can be obtained. The plan is to have students read the references given in the assignments in order to broaden their interest in good driving and the philosophy of safety education. They are checked up by short periodical examinations and questioned on each assignment for a limited time according to an assigned schedule.

There are two important points which need to be stressed. Learners are inclined to appreciate the practice more than the theory, and the road driving more than exercises on the field. From the standpoint of economy of instruction, we find this order should be reversed, or at least the importance of the two properly equated. Those instructors whose students eventually become the most skillful and safest drivers put greatest emphasis on:

- A. The theory of driving brought out in reading.
- B. Mastering of the field exercises designed to develop skill in handling the car in a close situation.
- C. The development of proper attitudes in driving.

If these phases of training are properly carried out and developed road driving usually comes easily. Both learners and instructors should orient themselves to this point of view at the beginning of the course. It means reading the assignments in advance of the lesson and studying newspapers, magazine articles, accident reports, personal experiences and anything else which may help one get a broader perspective of driving. This accomplishment seems to bring greatest satisfaction to everyone concerned, over the period of time necessary to produce a mature driver.

The fundamental aim of this Manual is to make each learner a much better and safer driver during the first five or ten years of his driving period rather than to merely coach him up in order to pass the driver's license examination since most persons could accomplish the latter without much help. It is the record the learner establishes over the first five years that counts.

USE OF THE MANUAL AS A BASIC TEXT

This volume is very condensed and may be elaborated as a basic text for advance work in driver training for teacher training courses. For beginners only the rudiments of driving are stressed but there is no limit to the extent of elaboration that might be made for advanced students of driving. In such instances its use should be supplemented with wide readings from standard reference sources as well as the periodic literature on the subject.

III. GENERAL OBJECTIVES OF A TYPICAL COURSE AND A DISCUSSION OF VARIOUS METHODS OF TEACHING DRIVING

- A. The general objectives to be attained by instruction in actual driving are set forth as follows:
1. To develop the fundamental and correct skills necessary for proper manipulation of an automobile.
 2. To develop confidence, self-possession, and poise while at the wheel by clearly analyzing each operation in order to establish clearly in mind the principles of safe driving.
 3. To develop an appreciation of the need for good driving, skillful control of the car, and courtesy at all times while at the wheel of a motor vehicle.
 4. Ultimately, to reduce accidental deaths on the streets and highway and to make motor-ing a safe recreation for everyone, and means of transportation.
- B. It is, of course, true that one may fulfill most of these objectives and yet not be a safe driver. They are, however, the first fundamentals in manipulation which can be learned by the average adolescent or adult and which will make his driving a little easier for him, an accomplishment of which he is proud. In addition, the driver must have:
1. A desire to learn to drive safely for his own protection as well as for that of others.
 2. A knowledge of the road laws and local regulations in the state where he is licensed and at least be familiar with the commonly accepted traffic regulations of other states.
 3. A knowledge and sympathetic understanding of traffic regulations and how the latter promote safety.
 4. An appreciation of the enormous power of the modern automobile and its potentialities for good or for harm.
 5. A knowledge of his own limitations and how they may affect his driving.
 6. An understanding of, and a desire to compensate for his weaknesses or deficiencies.
- C. These achievements imply a knowledge of traffic signs, familiarity with the locale, an appreciation of danger situations and a desire to cooperate with others either in an automobile, or otherwise.

The exact means of accomplishing the desired results is somewhat arbitrary. Some may attain it one way, others another. That an instructional program will shorten the process is almost axiomatic. Any highly developed skill, attitude, or functional knowledge rarely reaches a very high state of perfection without the aid of helpful and constructive criticism on the part of someone who tactily or otherwise acts as an instructor or coach. This is true for three reasons:

1. One never sees his actions as others see them.
2. The learner often does not understand the difficulties he is trying to overcome.
3. Man is given to an over-evaluation of his own ideas.

D. The various methods which have been used throughout the United States to bring about sportsmanlike driving may be described as follows:

1. The haphazard or trial-and-error method. Most persons learn to drive in any way they can, and few ever reach a high state of mastery in driving an automobile. They "learn by ear" as an untutored musician, and will face the same disappointments and embarrassments in the symphony of traffic that the "ear-fiddler" would have in attempting to play with a symphony orchestra.
2. A method of vicarious experiencing in which the learner views pictures, hears lectures, and otherwise is instructed in what he should do and what he should not do. Negative instruction is avoided as much as possible and the learner is taught only what he should do. This may or may not be pedagogically sound, depending upon the nature of the function being learned. There are times in driving when one must know what not to do.
3. A certain amount of classroom instruction, supplemented by actual practice in driving on the highway or on a training area designed for the purpose.
4. By classroom instruction in the basic principles, laboratory practice on the fundamentals of skill, and finally by actual driving on a small course in limited traffic.

That all these except Method 1 have their strong points is beyond question. It depends upon local conditions which are most practical in the actual learning situation. One can imagine any combination of methods as suggested above, so far as time requirements and location of instruction areas are concerned. Let us examine a few of the supporting arguments for the various methods. Nothing can be said for Method 1 except that it is wasteful and inefficient; in fact, not a method at all.

Method 2 is economical. There may be no place to train drivers, no facilities to make road practice possible, and it is feasible to cover the same units of instruction by classroom methods. There is no risk to the student or the teacher and few additional obligations for the school. It may not be adequate, but it is all that can be done. These arguments are all sound except the last one. Actually, it probably represents all that the school system may be willing to do. The fact is that high schools from a mere handful of students to those enrolling thousands do more. Where there is a will or desire there will be found a means or way of accomplishment.

Method 3 employs classroom instruction but is also supplemented by actual practice in the function to be learned. No pianist ever learned piano without an instrument. No golf player ever received much recognition for his achievement by studying books, attending lectures on golf-playing or by listening to anecdotes on golf while sitting around the clubhouse hearth. All these incidental things are necessary but represent the auxiliary rather than the essential motor activities in learning a skill. In the car is the place to learn driving. Let it be on a restricted area, if necessary, but get the learner immediately to the car. It will develop confidence and stimulate interest. This method emphasizes the need for dual-control cars for beginners.

These arguments are all psychologically sound but practically may not always be feasible. At least this is true so far as time allotments and schedules make the method expedient. In general, it represents a method combining individual and group instruction.

Method 4 involves three stages: (a) classroom instruction or vicarious experience, (b) laboratory practice in "dummy cars" using standard controls, and (c) actual practice behind the wheel of an automobile. Again there are considerable possibilities for variation in the exact procedure. The laboratory may be observational only or it may involve actual manipulation of car controls. The controls may be limited to the steering wheel and shifting devices or they may include clutch, brake, accelerator, observation of signs, signals, etc. The actual driving experience may be subsequently given with or without any form of dual controls in the car. This driving experience is usually given on a special field, isolated driving course, or in regular traffic.

Wisdom dictates several precautions to be observed when using the latter method. Either the groundwork must be very complete and the driving course made free from danger by collision with fixed or moving objects, or else there must be a preliminary period of training in a dual-control car with very careful supervision before traffic is encountered. The importance of avoiding any kind of accident is paramount for two reasons: (a) no one should be injured in any way by training devices, which is axiomatic, and (b) the learner must not lose confidence in himself by being allowed to fail or become involved in a mishap or highly unsuccessful experience.

The various methods described are presented as they are now being used throughout the country and without bias on the part of the evaluator. Those favoring the immediate use of the automobile in a driving course have many points in their favor so far as learning experiments may be relied upon. One learns by doing and learns what he does. However, because of expense, risk, and time required, there may be some merit in learning the controls in the laboratory and then completing the instruction in a regular car.

The instructor should familiarize himself with the distinctions made here as early as possible. The following Units are offered as a combination of certain adaptations from the various methods of Instruction, but are largely a modification or adaptation of Methods 3 and 4.

IV. HOW TO USE THIS MANUAL

- A. The outline schedule of assignments for use of instructors and learners is to be followed consistently and according to a regular time allotment plan.
- B. Instructors. Use the Manual as a guide to subject matter for each assignment. Stay with this schedule. At each period explain to the students any questions given at the end of the lesson which they could not answer from readings.
- C. Learners. Use the Manual as a basis for developing a thorough understanding of driving. Cover the questions at the end of each chapter in your text and Manual, since examinations will be based upon them and the assignments. Ask instructor to explain anything you don't understand. The more you know about your car, the better and safer driver you will become. The assignments do not always cover the same points that your instructor will discuss with you. They are intended to supplement your classwork and instruction. The perforated sheets are to be carefully worked out and handed to the instructor at the end of each unit.
- D. The Appendix contains additional tests, check forms, questions, and information which may come up in a driver's license examination. It should be carefully studied by each learner and instructor early in the course.

V. CLASSIFICATION OF DUTIES AND RESPONSIBILITIES IN A TYPICAL DRIVER TRAINING SITUATION

A careful division of labor and assignment of responsibility usually helps to simplify any system of instruction. Since this type of instruction is still in the novel stage this section is inserted as a guide to administrators, supervisors, instructors, and students. If each person concerned will study this section carefully he will know exactly what is expected of him or her and the greatest efficiency secured.

A. Abbreviated outline of duties and obligations of the supervisor.

1. Before course begins.

- a. Arrange for instructors, supplies, and conditioning of the car.
- b. Set time for first organization meeting at beginning of each session. At this time, call together all who have applied for the course and explain the plan and details as to:
 - (1) Fees and their payment.
 - (2) Organization of groups - Assign each to a group of 3 or 4.
 - (3) Texts used.
 - (4) Credit and non-credit status.
 - (5) Plan of instruction.
 - (6) Need for permit to drive on the road. Distribute state manuals of road laws.
 - (7) Set time for next meeting to verify all assignments.
 - (8) Hand out assignment sheets and materials.
- c. Second organization meeting is called as scheduled to:
 - (1) Complete partially organized groups.
 - (2) Make necessary shifts to balance groups.
 - (3) Give out assignment sheets and any other materials on hand to anyone present for the first time.
 - (4) Explain a second time about payment of fees.
 - (5) Clarify the instructions as to meeting place, hours, time in the car, at the wheel, etc.
 - (6) Give or provide first lecture. Films may be used if available.
 - (7) Make arrangements for regular group meeting in cases where it is needed.

2. During the course.

- a. See that all groups report as scheduled, that instructors are properly prepared and understand the necessary routine. Also check first week for balancing of groups, reassignments, etc.
- b. See that all get to the laboratory, have tests completed and give interpretation of each learner's record.
- c. Check to see that schedules are followed and that instructor-learner relationships are compatible.
- d. Make arrangements for any make-up or special work in car.
- e. Schedule or arrange a road driving experience for each group to be supervised by a staff member.
- f. List all potential graduates and get list for certificates about the sixth week of the session.
- g. Arrange for scheduling of State Examiner, and of learners for examination.

3. At end of course.
 - a. Hold final group meeting for testing and instructional purposes about the last week of the session.
 - b. Supervise personally the driver's license examination and entertain the examining officer in cases where such arrangements are made.
 - c. See that all certificates are given out and reports are handed back.
 - d. Assign final grades.
- B. Abbreviated schedule of obligations for head instructor in addition to those listed for regular instructor.
 1. See that all instructors meet classes at scheduled place.
 2. See that records are complete and are kept up-to-date.
 3. Check car for gas, oil, water, or antifreeze, tires and mechanical condition three times a week. Make report to course administrator when repairs or supplies are needed.
 4. Plan to post a makeup schedule in room assigned as headquarters. Have space for temporary entries.
 5. See that examination forms are available to all instructors.
 6. Check to see that all tests are given on time and as planned.
 7. Arrange for periodic development of new examinations.
 8. Confer with supervisor at least once a week on any other matters which need attention.
- C. Abbreviated outline of duties and obligations of instructors.
 1. Before the course begins.
 - a. There are two organization meetings at the beginning of each quarter. You should report to these meetings to assist in organizing groups. Your schedule is needed at this time. Applicants are assigned to groups and are given copies of the state motor vehicle laws.
 2. During the course.
 - a. Meet your group at the time assigned at the designated location. Take care of the following routine before beginning your classwork.
 - (1) See that everyone has filled out an Enrollment Record Card and Clinical Form.
 - (2) Give each student an assignment sheet.
 - (3) See that each has a copy of the state motor code.
 - (4) Explain that classes will be made up of those who have taken care of fees and if anyone has not done so he should see the business office.
 - (5) Explain about the Manual and texts which are used. Ask the learners to provide the required materials before the next period and to read over Unit One and Two in Section XI. Special attention should be given to the pages in small print by beginners.

LEARNING TO DRIVE SAFELY

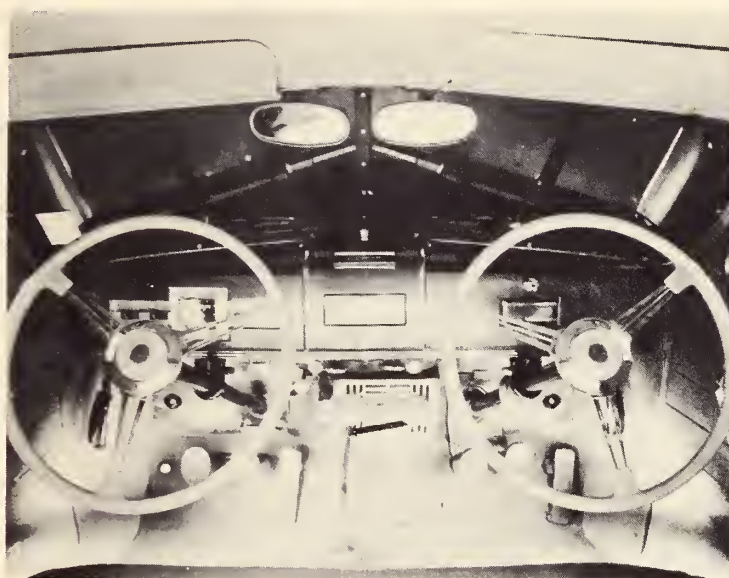
- (6) Explain the basis of credit and enrollment.
 - (7) Proceed to cutaway car and cover regular assignment as scheduled in Unit One. Make sure students understand where the group meets at the second period.
 - b. Plan to get your drivers through the driving tests used as early as possible. This should be done by the fourth period at the latest.
 - c. Give quizzes and follow the schedule carefully. Keep record cards up-to-date and in the stated location.
 - d. Complete Rogers-Lauer Scale (See Appendix) for each learner before the fourth period. File in same place as cards.
 - e. Before midterm see that credit students have started their term papers or scrap books and are keeping systematic notes on lectures and readings. The latter are to be kept on the pages of the Manual which are perforated.
 - f. Have all register for license examination at the end of the course.
3. At end of course.
- a. Be sure your Record Cards and Clinical Forms are complete as to:
 - (1) Attendance.
 - (2) Ratings - both sides filled out.
 - (3) All examinations taken.
 - (4) Your signature attached to each.
 - (5) Your notations as to performance of driver.
 - (6) The grade you assign for classwork. (See Appendix B)
 - b. Get a report of the result of the driver's license examination for each examinee you trained. This is for your own use. Check with supervisor to explain any unusual results.
- D. Outline of duties and obligations of learners.
- 1. Before course begins.
 - a. Attend both organization meetings. (These are a part of the course of instruction.)
 - b. Pay fee at business office.
 - c. Provide yourself with the Manual and any necessary materials at the book store.
 - d. Read the first two assignments.
 - e. Be certain of group assignments and appear as scheduled.
 - f. Secure assignment sheet and begin study of state manual of road laws.
 - 2. During the course.
 - a. Prepare all assignments in advance of lesson. Answer questions not well understood after taking them up in class with your instructor.
 - b. Get permit by end of fifth period.
 - c. Keep notes on lectures. Credit students are to report their progress to supervisor before midterm.

-
- d. Take all quizzes given. Copy Clinical Form results (See Appendix) in your Manual.
 - e. Attend final group meeting for tests and sign up on the schedule for license examination. All notebook work and reports are due at this time.
3. At end of course.
- a. Take license examination. (Optional for out-of-state students.) Return to office and pay license fee. Receipt is good as license and should be carried at all times.
 - b. Get certificate given by State by calling at office if such has not been already obtained.
 - c. Return for scrap books and materials handed in at end of quarter not later than the second week of the following quarter. Keep it for further reference.

VI. SPECIFIC PRECAUTIONS AND INSTRUCTIONS FOR PROTECTION OF DUAL-CONTROL TRAINING CARS

- A. The following points are very important and all instructors will observe them. It is often difficult, due to the ability to secure parts and to have repairs made on some motor vehicles. All instructors are to see that the following precautions are rigidly observed:
1. The car should be obtained and left each time according to arrangements made. Keys should be returned to headquarters or otherwise as arranged.
 2. Instructor records mileage, gasoline level, and any condition of the car which needs attention before and after each period of instruction. (See form in glove compartment of car.) These data are needed for school and other reports.
 3. Tires should be checked regularly for inflation and other conditions of tread or wearing surface noted as part of the instruction. The car should not be moved until tires are checked each time.
 4. Extreme care should be exercised relative to the car in general. Smoking is not to be indulged in while in the car or on the practice grounds. The finish and interior are to be carefully used to prevent damage as some training cars are loaned by courtesy of the automotive industry.
 5. Smooth operation of the car is to be stressed at all times. It saves both car and passengers. Use a milk bottle or jerk recorder on the floor as an objective check.
 6. Keep the clock set and divide time equally between members of the class. Call their attention to this and ask them to help watch the time.
 7. Be sure both hand brakes are released each time the car is placed in motion. Full dual-control cars have two hand brakes.
 8. Do not allow learners to pull up on horn rings, twist signal lights on fender or otherwise unnecessarily and carelessly manipulate any controls or auxiliary equipment of car.
 9. Never allow learners or others to slam or "ride" the doors. Opening doors too wide may also spring them. Modern car doors will close tightly if gently pushed shut. Racing the motor and slamming doors are discourteous and needless in driving and are considered very bad taste.
 10. In no case should instructors allow parts of the car or tires to touch stanchions or guides used for training. Drive slowly enough at first to avoid this. In actual driving a contact may mean a new fender. When in a close place have student "inch" along by slipping clutch slightly.
 11. Instructors only are to drive car from garage and to return it themselves. No learner or unauthorized person is to perform this function.
 12. Water and fluid levels in radiator are to be watched carefully. The temperature gauge must be carefully observed in summer. In winter care must be taken to replenish any alcohol boiled out. It is best to use ethylene glycol compounds for training cars as slow driving causes heating.
 13. The instructor is to see that windshield and all windows and mirrors are clear at all times. A cloth should be available in the car and learner should be asked to attend to this whenever needed as a part of the training.

14. In no case should the car be taken off the practice field unless authorized. Regular staff members will go along when road practice is given.
15. Do not allow students to hit bumps, ditches, curbs, or anything which would damage tires or endanger springs.
16. In no case should the instructor leave the car without taking the key with him. Your student may drive away and leave you greatly embarrassed.



Full Dual-Control Car
Used for road training (Courtesy Studebaker)



Practical Aspects of Training Stressed

VII. PRINCIPLES FOR SAFETY AND EFFICIENT TEACHING

- A. Points to be observed at all times on the driving course and to be enforced by the instructor.
1. Stress the importance of reading the instruction books and text used. Your job as an instructor will be much easier and more efficient. The learner must know his road laws well to obtain a license or permit which is given only by a state officer or deputy.
 2. Insist on proper position of learner at the wheel at all times. Correct improper positions carefully. Do not allow them to wrap thumb around rim of wheel or allow the wheel to slide through the hands when turning.
 3. Instructors must develop independence of the student. Use the dual-controls only for demonstration or for emergencies.
 4. The instructor is to stay at the wheel at all times unless he removes key from the ignition. Students are to make changes in positions when taking turns at driving by getting out and going around car when necessary.
 5. All learners are to stay with the assigned group in the car during the entire instruction period. Any exceptions will be authorized only by the supervisor. A great deal is learned by observing the instruction of others.
 6. Not more than two should ride in the front seat and no more than three in the back seat at any one time during period of instruction except when necessary for four to ride in back seat during final observation by regular staff member.
 7. Insist on precision in all performances taught. Especial care must be taken not to cut corners or swing wide. State examiners are very cranky about this matter.
 8. Keep the signs and guides on the test field up and in position at all times during the period of instruction.
 9. Do not use accelerator or feed gas when backing. Also have trainee steer with left hand and look back over the seat to get a broad view when backing. Keep feet at brake and clutch for quick stop.
 10. Insist on hand signals at all times when turning or stopping, or when changing lanes. This is imperative if the learner is to get a license.
 11. Have the learner practice manipulation of the controls blindfolded. He should learn to do this by touch as he will need to keep his attention ahead and around him for safety in driving.
 12. Slow down before turning corners.
 13. Learning to drive correctly is serious business. There should be no bantering in car or joking those who are practicing at the wheel.
 14. Children and unauthorized persons are to stay off the driving course at all times. Learners should never run across lanes when cars are near or approaching.
 15. Stay away from the front or rear of the car at all times unless being instructed at the time and the car is standing still.

16. In no case should anyone ride on the running board or fenders. No exceptions are to be tolerated.
17. Safety first must be practiced at all times. If it's dangerous to anyone or to any part of the car, don't do it.

VIII. POINTS ON WHICH ONE IS JUDGED AS A SAFE DRIVER

A. Good drivers will observe the following practices very carefully:

1. Proper position at wheel with hands at 10 o'clock and 2 o'clock or 4 o'clock. Neither anxious, cramped, or slouchy. Keep both hands on the wheel at all times except when shifting gears or signaling.
2. Drive at the same rate of speed as the main stream of traffic. To drive faster or slower creates hazards from passing.
3. Strict observance of all markers and signals.
4. Keep sufficient space between cars in traffic flow.
5. Start and stop smoothly --like a streamline train.
6. Slow down before taking corners. It may be necessary to shift to a lower gear.
7. Observe at intersections by turning head to right and then to left. Eyes do not see as you move them.
8. Keep on proper side of road or pavement.
9. Pass only when roadway is clear ahead and view is not obstructed.
10. Keep motor running quietly without undue racing when idling.
11. Keep foot brake on when standing to prevent rolling backward or forward. Apply foot brake immediately when stopping and shift into neutral immediately.
12. Keep the fenders free from dents and damages of any kind. Also the condition of tires, bumpers, and grill are indicators of driving skill. Be careful not to touch stanchions and you will not damage your own car later from contact with cars or fixed objects.
13. Use the horn sparingly and delicately, only to warn pedestrians or motorists who do not see you.
14. Move in a straight line and do not weave around in traffic. Give hand signals when changing lanes.
15. Avoid unnecessary hazards in driving by staying clear of congested traffic whenever possible. This may mean planning a route in advance and varying your speed to conform with stop-light timing, pedestrian movement, and other conditions known to exist at certain times of the day.
16. Get into the proper lane before turning.
17. Keep in the proper lane while turning. It is best never to cut a traffic lane as this creates a potential hazard.
18. Show courtesy to other cars and pedestrians by yielding the right of way, and give appearance of driving leisurely. The nervous or varying-speed driver is often incorrectly considered the fast driver. He may not make good time on the road at all.
19. Keep towards center of street in the city where cars are parked but well at the side when driving on a country road.

20. Always park the car properly and in the right place to avoid contact with passing vehicles.
21. Move very slowly when getting in or out of a close place. This may be accomplished by slipping clutch slightly to give the idling motor an advantage.
22. Keep the eyes on the road at all times and handle controls by touch.
23. Check the car regularly and see that gasoline, oil, water, and air pressure are what they should be. It is unsafe to drive a car with oil and gas low as hazards are created by stalled cars.
24. Back car with feet at brake and clutch without touching the accelerator. Look over seat to right and turn far enough to see out of all three back windows. Arm should be on the back of the seat.
25. Allow motor to brake car whenever possible to save brakes from undue wear. In some states it is illegal to coast down hill.
26. Drive defensively and never take anything for granted regarding the other driver.

IX. EXERCISES FOR DEVELOPING SKILL AT THE WHEEL WHICH
HELP TO MAKE A GOOD DRIVER AND SHOULD BE INTRODUCED IN THE
FOLLOWING ORDER BY THE INSTRUCTOR

- A. Each instructor should follow schedule carefully and give all learners practice in these fundamentals. If mastered well there will be no difficulty in traffic driving.
1. The six steps in starting. Given the first day, there is to be no variation from this procedure as it is basic. Position and method of holding wheel to be emphasized.
 2. A quick routine check-up of the car each time a class takes over. This habit should be carefully established with all learners.
 3. Proper use of clutch and with particular emphasis on the power-point. The first lessons should involve a maximum of stopping and starting. This will necessitate shifting from one gear to another which should also be carefully taught using the letter "H" system. Teach learner to handle lever lightly but shift precisely.
 4. Emphasize the importance of efficient shifting. Review the letter "H" concept and show how it is the same whether on the floor or on the steering wheel. Teach the learner to use palm down over shifting knob when shift lever is on the steering wheel. Hold lever lightly between thumb and first two fingers. We recommend that strict uniformity be stressed in this practice.
 5. Teach the correct method of holding the wheel--either at 10 and 2 o'clock or at 10 and 4 o'clock. Be sure the hand-over-hand method is used when turning. Emphasize the importance of straightening up after turning. Warn against over-steering which leads to wandering on the road.
 6. Turning corners is often badly taught. The most important items are: (a) slow down before turning, and (b) keep in the proper lane, and (c) give hand signals. Wide turns and cutting of corners are both equally bad. Some drivers are lazy at the wheel. They do not turn fast enough at corners, but they often drive too fast. Reverse these practices.
 7. Give plenty of practice on line driving. Call attention to the reason for this exercise. A driver must be able to put his wheels where they should be on the roadway. Drive both forward and backward, first with left wheel on the line, then with the right wheel on the line. Where a line cannot be laid down, old tires may be laid tangent to a line and about 15 to 20 feet apart.
 8. Teach the accepted method of backing: feet at brake and pedal with body turned to right and right hand laid on back of seat. Do not feed gas when backing.
 9. Forward and backward through the zig-zag stanchions is a most important exercise. It paves the way for parallel and angular parking.
 10. Forward and backward driving through the offset stanchions is somewhat more difficult. If student is weak in this respect, improvise some special exercises with stanchions. Consult supervisor for suggestions.
 11. Driving on a curved line both forwards and backwards should be practiced. Left wheel on line first then right wheel on line. This is much more difficult than driving on a straight line.
 12. Practice of the nose-down before a crosswalk. This is very essential and learners should be warned that brakes are not the same on all cars. Driving past the stopping point or line should not be tolerated.

13. Accepted methods of parallel parking should be taught and practiced carefully step by step. The steps should be outlined on the blackboard before getting into the car.
14. Accepted methods of angular parking should be taught and practiced carefully step by step.
15. Starting on a hill is a very essential operation and in many cities and towns no one is given a license who does not show proficiency in this operation.
16. Explain or demonstrate traffic circles, and how they are used by referring to models or diagrams on the blackboard. The Stoner Traffic Board is invaluable. (See Appendix)
17. Explain or demonstrate clover-leaf intersections and explain the theory back of their construction and use.
18. Observation of all signs and signals at all times should be emphasized. Carelessness on the part of the instructor may cause the learner to fail his license examination or, even much more seriously, to become involved in an accident.
19. The group in the car should be watching the one who is driving at all times. They learn by observing.
20. The instructor should constantly be on the alert to show why certain practices are safer than others. His experience, zeal, and skill in this respect is the chief value he has as an instructor.
21. Verbalized instructions are to be gradually decreased as the learner progresses. Use a proper balance between demonstrating and letting the learner correct his own mistakes.

X. TYPICAL ASSIGNMENTS FOR DRIVER TRAINING GROUPS

Reference Books: (a) Sportsmanlike Driving. (b) Man and the Motor Car. Use either book available. The Manual may also be used as a basic text with above and other references.

Your Instructor: _____ Hour of Meeting: _____

Assignment for use with Dual-Control Car. Course to include at least 15 hours of instruction in the car and in class. Each learner will need a notebook, The Manual, and access to the reference texts. Ask for other printed matter in the office of the supervisor or in the reserve library. Assignments in 1948 editions of texts.

| <u>Unit</u> | <u>Date</u> | <u>Assignment</u> |
|-------------|-------------|---|
| 1. | _____ | <u>Study of Cutaway Car and Care of Motor.</u> Manual Sections I-X. Sportsmanlike Driving, pages 198-231, Chapters I and II and XII; Man and the Motor Car, pages 1-19. |
| 2. | _____ | <u>Care of Radiator.</u> Manual, Sections XI - One, also Appendix; Sportsmanlike Driving, pages 232-250, and Chapters III, IV, and V; Man and the Motor Car, pages 46-64. |
| 3. | _____ | <u>Care of Tires.</u> Manual, Sections XI - Two. Sportsmanlike Driving, pages 133-149, 245-246 and 319-320 and Chapter III, IV, XVII and XIX; Man and the Motor Car, pages 20-45. |
| 4. | _____ | <u>Care of Finish on Car and Care of Brakes.</u> Manual, Section XI - Three; Sportsmanlike Driving, pages 80-110 and Chapters V, VI and XV; Man and the Motor Car pages 66-95. Short examination. |
| 5. | _____ | <u>Lubrication of Car.</u> Manual, Section XI - Four. Sportsmanlike Driving, pages 255-267 and Chapters VII, VIII, and IX; Man and the Motor Car, pages 96-108. |
| 6. | _____ | <u>The Lighting System.</u> Manual, Section XI - Five. Sportsmanlike Driving, pages 281-282, 260-265, 269, 330-454, and Chapters X, XI, and XIX; Man and the Motor Car, pages 98-120. |
| 7. | _____ | <u>Care of Interior.</u> Manual, Section XI - Six. Sportsmanlike Driving, pages 253-264, 366-371, and Chapters XI and XVI; Man and the Motor Car, pages 122-139. Short examination. |
| 8. | _____ | <u>Carefulness in Starting and Stopping in Relation to Safety.</u> Manual, Section XI - Seven. Sportsmanlike Driving, pages 265-268 and Chapters XV and XX; Man and the Motor Car, pages 140-162. |
| 9. | _____ | <u>About Gasoline and Economy in Driving: Insurance.</u> Manual, Section XI - Eight; Sportsmanlike Driving, pages 314-427 and Chapters VI and XXI; Man and the Motor Car, pages 187-226. |
| 10. | _____ | <u>Code-Review and Emphasis on Essentials.</u> Manual, Section XI - Nine and Ten; Sportsmanlike Driving, pages 398-455 and Chapters XVII, XVIII, XXIII, and XXIV; Man and the Motor Car, pages 187-226. |
| 11. | | Driver's license examination. Read Man and the Motor Car, 227-287 and Section XII carefully. |
| 12. | | Final examination on the course material including texts, Manual, and all phases of classwork. |

Note: This assignment sheet is typical of a practical course in driver training based on ten years experience. It may be modified to meet any particular situation. Readings may be distributed over a greater period of time at the discretion of the instructor. Since most text books do not cover the material systematically as needed the references marked by pages refer specifically to behind-the-wheel manipulation while the background readings are given by chapters.

If more than 20 periods can be devoted to driver training it is suggested that about one fourth of the first part of the course be given almost exclusively in the classroom and background material be covered thoroughly using the car only for class room demonstrations and for laboratory work preparatory to driving. In this way the students should be much better prepared to go into the car and make maximum progress. It should reduce the learning period and effect greater economy and efficiency of instruction.

Students would also be more highly motivated to master the background material as they are always more interested in getting into the car than in studying the theory of safe driving. The highest motivation will probably be obtained by having the practical work integrated with and given in the same session as the theoretical material covered.

YOUR FIRST STEPS IN LEARNING TO DRIVE

(Student's introduction to Unit One)

You are about to undertake one of the most interesting experiences you have ever been privileged to enjoy--that of learning to drive a motor vehicle. It is necessary for you to extend your knowledge concerning four major categories in order to become a safe driver; (1) yourself and your potentialities, (2) the automobile you will be driving as well as cars of other makes you will drive, (3) the road laws, including customs, ordinances and practices in driving, (4) the highway, street and traffic system over which you will drive.

If you study carefully the texts and references given you will not only learn to drive more quickly and successfully, but you will get more pleasure out of driving later, especially when making long trips. One who knows little about a game will seldom enjoy playing it. The readings you will cover give background and explain the reasons for certain practices in the car.

The exercises in the car are graded to give progressive development of driving skill. They are founded on established principles of safe operation of a motor vehicle. You are urged to follow them carefully without deviation. There may be certain exceptions made later in the course, but at the present it will be necessary to follow the instructions literally in order to secure maximum progress.

Before you can drive on the public highway in certain states it will be necessary to pass both a vision test and a written test on driving practices, traffic ordinances and laws. Therefore the first study periods of the course should be partly devoted to the state manual on traffic laws.

Two other phases of driving need to be studied at the early part of the course. One has to do with the problems of automotive transportation and increased traffic on present day highways. This knowledge may be gleaned, in part, from assigned readings. The other phase is that pertaining to the automobile; namely, how it is built, and how it operates. Unless a machine is well understood it may lead some people to become nervous when trying to operate it. We tend to fear those things we do not understand thoroughly. Each person learning to drive should try to understand the working principles of an automobile. Besides reducing nervous tension it will also serve a useful purpose when on trips. Only a slight knowledge of the working of a car may save needless delays and expense while driving.

One of the aims of a driving course should be to teach the proper care of the family automobile. This is very important since it represents the greatest single expenditure of a family outside the home itself. Many families find the total amount of money spent exceeds the cost and upkeep of a five or six-room home. Modern automobiles are well enough built to last 15-20 years and really look respectable if their owners would take the same care of them as they do of a new house. Unless the life of an automobile is lengthened, many families may be unable to own a car unless economic conditions change radically.

While learning to drive, certain basic information on care of the automobile will be sandwiched into the course of instruction so that at the end of the course you should be able to take a new automobile and get along with little unnecessary expense, either in operation or in damage due to accidents. Read your assignments carefully, answer the questions at the end of each unit and question your instructor concerning any points not clear. In this way you will not only be learning to drive safely, but also economically and enjoyably.

XI. COURSE OF INSTRUCTION

The aim of the course is to cover as many points relating to safe and sane driving as possible. The assignments of reading do not always cover the same points as those taken up by the instructor. This is done intentionally to cultivate scholarship and breadth of knowledge on the part of learners.

Each Unit may be expanded to fit needs of the local situation. Each period may be divided to include twenty minutes in class discussion of minimum essentials and seventy minutes in the car equally divided among the group of four persons. Other divisions of the period may be made to fit local situations. Under certain conditions it may best to give the first periods of instruction to the whole group or class at one time.

UNIT ONE

Getting Acquainted With the Car

As the title implies, the main idea in this Unit is to get the learner familiar with the car. It may be divided into several lessons, but taught as a unit.

A. Objectives.

1. To demonstrate the interior of the car and to show the various controls and gauges.
2. To teach the correct position of a driver at the wheel.
3. To teach and demonstrate essentials of the mechanism under the hood and conditions which may affect performance.
4. To become familiar with the controls and shifting.

B. Approaches.

1. Actual inspection of a late model car and cutaway model of a car.
2. Call attention to pictures and illustrations in pamphlets or text.
3. Various charts and slides used to illustrate points covered in the lesson. Film "Know Your Car" is very appropriate. See Appendix C.

C. Procedure.

1. Sitting at the wheel. Familiarize student with the various controls.
 - a. Gauges on the dash. Give purpose and specific points on each.
Gasoline gauge, temperature gauge, oil pressure gauge, ammeter, speedometer.
 - b. Safety aids. Locate and show how they work.
Headlights - switch; tail light - switch; rear view mirror, windshield wipers, sun visors, windshield defrosters, horn, proper seat adjustment, rear vision mirror, heater, etc.
 - c. Starting devices.
Ignition switch, starter switch, choke, and hand throttle in the car.
 - d. Control devices.
Steering wheel, clutch pedal, gear shift, accelerator, foot brake, hand brake.



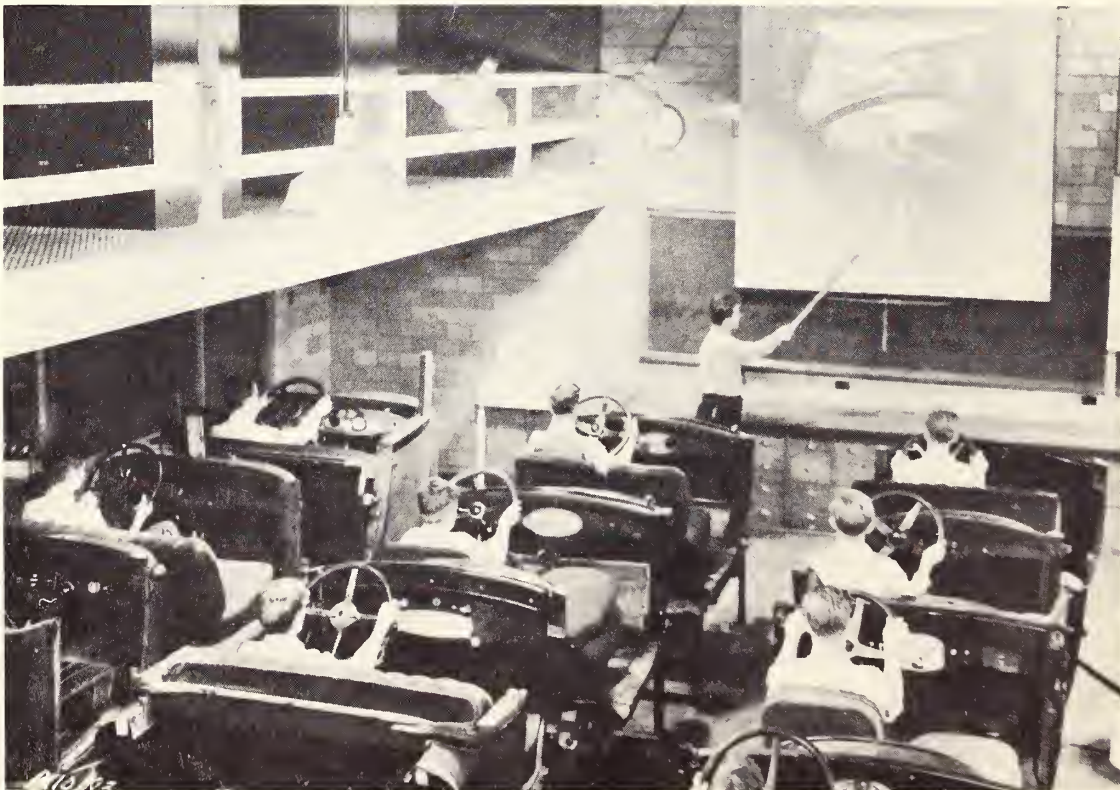
Lane Technical High School

Illustration (A) shows the instructor giving basic instruction in use of brake, clutch, and shifting mechanisms. Each row of lights represents a dummy car as shown in (B). When a certain response is necessary the student reacts and the reaction made is registered on the light board. In this way group instruction can easily be given.

The next picture (B) shows a later stage where reactions are made to motion picture presentations. The instructor can readily check the proper response of individual students by observing the control board.

After these two phases of basic training the students are given cars and operate them on a miniature field under supervision.

(See page 130 for training field used at Lane Technical High School.)



2. Under the hood. Use cutaway car, an old motor and chassis, or good charts. (See Elements of Automobile Mechanics by Heitner, Shidle and Bissell)

- a. Engine proper.

Block, carburetor, fan, pumps (water and fuel), ignition, distributor, spark plugs, the "shove" that is the beginning of power, timing of spark gives perfect rhythm, strokes--crankshaft (See chart on intake, compression, power stroke, and exhaust stroke), cooling system (water, oil, and air).

- b. Chassis.

Transmission - flywheel, clutch, and driving mechanism; differential gears and connection with drive shaft, drive pinion, ring gear, differential pinion, and other gears, brakes (foot and hand), mechanical, hydraulic, electric, and other. Emphasize care of brakes.

D. Evaluation.

1. Have students explain use, likely weakness, or something of importance concerning any 10 of the following items:

- | | |
|----------------|--------------------|
| a. Ammeter | k. Fan belt |
| b. Carburetor | l. Spark plugs |
| c. Timer | m. Ignition points |
| d. Fuel pump | n. Coil |
| e. Battery | o. Gear shift |
| f. Radio | p. Starting motor |
| g. Lights | q. Generator |
| h. Tires | r. Radiator |
| i. Oil level | s. Brakes |
| j. Water level | t. Clutch |

2. Use 5 or more questions given under F for testing mastery of this section. Formulate them into objective form.

E. References and reviews for notes. (Each student should keep a notebook.)

1. Pages 198-232, Sportsmanlike Driving, and Chapters I, II and XII.
2. Pages 1-19 in Man and the Motor Car.
3. See list in Manual for additional selected reference readings.
4. Copy of state motor code or manual.
5. Start a scrap-book in the appendix of your notes for pamphlets, news clippings, editorials, cartoons, poems, or anything which will help you to realize danger situations and become more careful as you develop your skill as a driver.

F. Questions on Unit One. To be answered by the learner and written up and entered in notes. Those questions not readily answered from reading are to be discussed in class by instructor. Write answers on back of sheets or insert pages. The exercises at end of Unit are to be written up and handed in to the instructor at the end of each Unit.

1. Does electricity operate the gasoline gauge?
2. Where will the temperature gauge stand when the motor is getting too hot?
3. What does the temperature gauge normally read when driving in summer? In winter?
4. Will the oil gauge show how much oil is in the crank case?
5. Can one tell whether the battery is almost fully charged or discharged by the ammeter?

6. Should the speedometer ever be oiled? By whom?
7. Can the speedometer be set back?
8. How is electricity measured?
9. How many amperes do all the lights draw when turned on?
10. How long would it take to run the battery down with all the lights turned on?
11. If a generator charges 15 amperes, how long must it run to completely charge a battery which is down? Assume 50 per cent efficiency of the battery and a battery of 120 ampere hours.
12. Does the law require a car to have two tail lights?
13. How many lights must a truck have on it?
14. What is a sealed-beam light? Why is it better? Which is better, one of all glass or one with a metal back? Why?
15. How should the rear vision mirror be adjusted?
16. What is the sun visor for?
17. Where is the defroster? How does it work?
18. When should the horn be used? Check your state motor code.
19. Can the front seat of most cars be adjusted? If it cannot be adjusted in some cars, what should the driver do?
20. What two types of ignition control switch will one find on cars?
21. Name 10 places a starter switch may be found. List in notes.
22. Does the training car have a choke control on the dash? Why?
23. How should one hold the steering wheel?
24. Should the clutch be released suddenly when starting the car? Give reasons in notes.
25. Should the clutch be released suddenly when shifting from second to high? Why?
26. Should one use accelerator when backing on the level?
27. Should the foot brake be used without releasing clutch in slow traffic? Why? Is this true in road driving? Why?
28. Why should hand brake be released last when starting?
29. Draw a letter "H" and think through the gear shifts. How does this work when the shift is on the wheel? Do not look at movements made when shifting.
30. What must one do to get a permit to drive? What must he know?
31. Why is a permit necessary when at the wheel?
32. Sketch out all hand signals in your notes.

-
- G. Instructor will explain cutaway car. Use and refer to Studebaker ABC book, User's Guide, or any standard reference book or auto mechanic's book accessible to students.
- H. Exercises in the car on the driving field. Use a small section of the field only. Explain gauges, starting the motor, and use of the controls. Drive around field and cover essentials of using clutch and proper shifting. Explain hand signals. Have students start and stop repeatedly. No stanchions needed on the field. (See Appendix.) Keep the car moving as much as possible.



Checking the Car Headlights

Although a driving course is in no sense a course in automotive mechanics, it is essential to know certain things about checking the car, making temporary adjustments, changing a tire, etc. Students of driving should be encouraged to visit garages and get first hand information about such things as interpretation of car noises, lubrication, controlling vapor locks, towing, etc. (See page 122 for special form to be used in checking cars.)

Student's Report for Unit One

Name _____ Date _____ Hour of Class _____

Section _____ Day _____

A. Give answers to the following questions on assignment. Give reasons. (See F. above)

3. _____

4. _____

10. _____

18. _____

20. _____

21. (a) _____ (b) _____ (c) _____

(d) _____ (e) _____

(f) _____ (g) _____ (h) _____

(i) _____ (j) _____

23. _____

26. _____

27. _____

28. _____

B. Sketch the following:

1. Hand Signals.

2. Clutch and power-point.

C. Give six steps in starting the car.

D. Describe any study, practice, or other experience you have done or had this week:

Graded by _____

Grade assigned _____

②¹²
③₃
8

LEARNING TO CONTROL THE CAR

(Student's introduction to Unit Two)

Proper control of an automobile presupposes that it is in mechanical condition, and has ample gasoline, oil and water to keep it running. The battery must have sufficient charge; the ignition functioning properly and the carburetor accurately set. Furthermore the gauges should all be working, the seat properly adjusted so that you can sit comfortably and depress the pedals all the way to the floor. The rear vision mirror should be adjusted properly so you may see a car following you at any reasonable distance. Some drivers use side mirrors and these should also be set properly and cleaned of dust and dirt. The tires should be checked for proper inflation every time you step into the car. Make a habit of a quick routine check everytime you start on a trip, however short. The windshield should be cleaned of dust as a clear windshield aids in making glare from approaching cars less annoying.

Your next job is getting properly adjusted in the seat. Lean back in a comfortable position and hold the steering wheel at points 10 and 2, or 10 and 4 on the clock dial. You should hold the thumb parallel with the index finger to avoid danger to the thumb when the wheel makes a quick turn, which sometimes results when a wheel strikes a rut or hole in the road. When turning a corner use hand-over-hand technique. Keep a moderate hold on the wheel at all times with one or both hands. Holding the wheel with one hand reduces control about 40 per cent. Never let the wheel slip through your hands.

Having learned the elements of proper steering, you now proceed to the matter of starting the motor. The following steps, with a few modifications on certain cars, are standard and should be practiced by every driver.

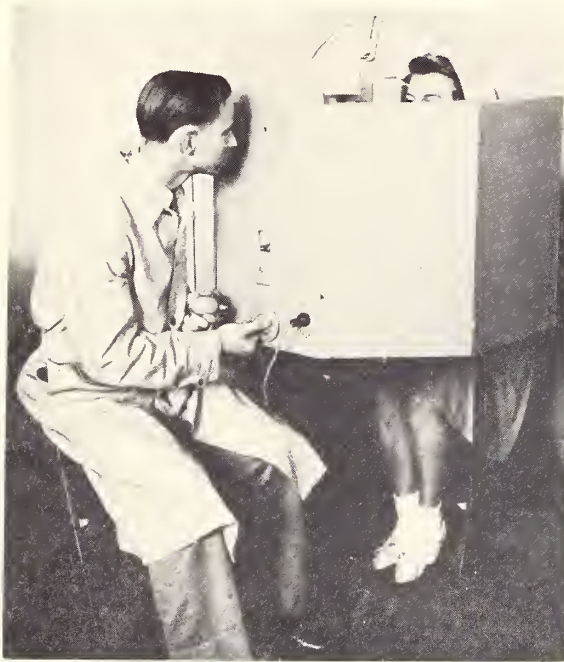
1. Depress clutch pedal far enough to completely release it.
2. Check your gears for the neutral position in the middle or cross bar of the H. Electric and vacuum gear shifts may require some modification of this step.
3. Turn on ignition. This may require two operations with cars having the ignition on the steering column. Ask your instructor for details.
4. Actuate your starter. It may need to be pushed, pressed, depressed or otherwise, depending on the make and model of car. There are at least 10 ways of actuating the starter. Some cars start when the ignition key is turned. Others have the starter on the accelerator or clutch. One older make of car was started by lifting the horn button.
5. Get your car into low or reverse depending on the direction you wish to move.
6. Release the hand brake. Be sure you do the last operation as it will save you many anxious moments and much expense, should your hand brake wear and fail to hold. Occasionally this happens when a car is parked and it drifts off. Many such accidents occur which are wholly unwarranted if the hand brake is not worn unnecessarily.

You are now ready to shift into low gear and practice maneuvering your car. When you let out the clutch to the power-point (where the pressure begins to decrease against your foot,) let the clutch slip slightly to make a smooth start. Make as many shifts, starts and stops as possible in your practice period. In the next lesson you will learn to shift through the gears in order to change speed.

It is a splendid idea to test the pressure of your accelerator in order to determine just how fast the motor must be turning to start smoothly and gradually, without "killing" or stalling it. Racing the motor is always to be avoided. The former is a bad practice and the latter very poor taste. It will cause jerky starting and unnecessary wear on a cold motor. You must learn to start and stop smoothly like a streamliner and not jerky like a freight train.

To make a smooth stop requires firm but controlled pressure on the brake pedal. Remember to release your clutch before applying the brake when driving slowly or you will stall your motor. At speeds higher than 25 miles an hour the reverse is true. Be sure you note the reversal.

At this time it is well to concentrate on the care of the cooling system which is very important in the safe operation of an automobile. The motor may be ruined in a few miles of driving if the radiator becomes empty, or if the cooling agent fails to circulate.



Field of Vision

(A) Careful studies of the magnitude of lateral field with the special perimeter shown above indicates that for practical purposes the slide-rule accuracy of simpler tests as shown in the back of the manual will often serve quite as well and save considerable time.

(B) The time necessary to make precision tests as shown in the perimeter described under (A) makes it impractical for certain purposes, although a quick test of movement determination in the lateral fields is desirable not only to determine the angles of discrimination, but also to suggest the need for careful observation at the sides at all times when driving. (See page 135 for simple test.)

UNIT TWO

Learning to Start and Stop Smoothly

One of the most important phases in learning to drive is that of starting. Another is proper stopping. Watch a streamliner and note how smoothly it starts and stops. Proper use of the clutch and feel of the power-point must be established. A decelerator is important, but if not available, use a jerk-meter or even a milk bottle set on the floor of the car. It should not upset in starting and stopping.

A. Objectives.

1. To develop the habit of always checking your car before driving.
2. To give practice in the proper steps to be taken when starting the motor.
3. To teach the proper steps in starting the car in low, through second and high gears.
4. To teach the proper methods and skill in stopping the car.
5. To teach the proper care and servicing of the radiator and the cooling system.

B. Approach.

1. Actual experience acquired by suitable instructions. Make check on smooth starting and stopping.
2. Reference reading in booklets to obtain background.
3. Studying parts of car and diagrams.

C. Procedure - Verbalize the action or function to be performed first, then practice.

1. Have each learner first tell the order of procedure, then execute without looking at the controls, each of the following operations:
 - a. Starting the motor.
 - b. Review steps in shifting the gears, starting and stopping.
 - c. Shift into low. Accelerate slowly, drive twice the length of the car and then stop smoothly. Restart the car and proceed.
 - d. Shift into second. Accelerate gradually and smoothly until the car is moving fast enough to shift to high within a distance of 50 or 100 feet.
2. Check each of the following:
 - a. Gas, oil, water, and tire inflation.
 - b. Practice and review steps in starting the motor.
 - c. Practice starting the car after motor is running.

D. Evaluations.

1. Review questions at the end of this Unit.
2. Let students check each other by asking questions and answering them.
3. Use milk bottle check for starting and stopping smoothly. Let no one kill the motor. Instructor explains use of decelerometer or tumbling cylinders.

E. References and review on notes.

1. Pages 232-250, Sportsmanlike Driving, and Chapters III, IV, and V.

2. Pages 46-65, Man and the Motor Car.
3. Problems and activities assigned by instructor as needed.
4. See list at end of Manual for further references.

F. Questions on Unit Two.

1. How many quarts of oil will most 6-cylinder cars hold?
2. How much air should be kept in tires?
3. How often should inflation of tires be inspected?
4. What is meant by camber of the front wheels? Caster? Toe-in?
5. What causes cupping of tires?
6. What are brakes lined with?
7. What are hydraulic brakes?
8. Where is the master-cylinder on hydraulic brakes?
9. What would happen if a fluid line springs a leak to the right rear brake?
10. Name three anti-freeze solutions and give two or three good and bad points of each. (In notes)
11. How can you tell if the fluid in the radiator is low?
12. What would you use to clean a radiator?
13. Why should cold water not be poured into a hot motor suddenly?
14. Show a plan for regularly rotating the tires.
15. How often should tires be rotated?
16. How can one injure a tire on a curb? Cite two or three ways.
17. How could a hose leading to the radiator make a car heat?
18. How many miles should the average car make on a gallon of gas? When driving 35 miles per hour? When driving 60 miles per hour? Cruising around town?
19. What tests must one take to get a learner's permit? Where may it be obtained?
20. If one has a permit under what conditions can he drive? Explain in full.
21. What is meant by the power-point when releasing the clutch?
22. When and under what conditions should the following oils be used? #10? #10W? #20? #30? #40?
23. Is transmission grease used in modern cars a thick grease or a heavy liquid?
24. How can you tell if the crank case needs oil?
25. How can you tell if a new tire driven 200 to 400 miles is wearing unevenly?
26. What is meant by an internal inspection of tires?

27. Does any part of a dry clutch ever need oil?
28. What will happen if the liquid in the shock absorbers gets low?
29. Why should a special preparation be used for rubber bearings?
30. Name different kinds of grease and preparations for proper lubrication of a car.

G. Exercises in the car.

Check all aspects of car in preparation for making a trip; gas, water, oil, battery (from ammeter on dash when running), tires, windshield, heater, defroster, sun visors, rear-vision mirror, etc. Give practice in starting, stopping, steering, and shifting. Emphasize radiator care in class. No stanchions are needed on the field. Use outside lanes of driving course only.

H. Class Work.

This period should be given to the discussion and measurement of psychophysical traits of the members of the class as they relate to driving. The Laboratory Record Form is used and as many of the traits measured as equipment and time will permit. Those starred form an excellent basic set of tests. The equipment is relatively simple and some of it can be made. (See Appendix E - Simple Aids for Use in Testing and Training Drivers.) Other equipment can be sometimes borrowed or set up from stock parts found in the physics and psychological laboratories.

On theoretical grounds it should be pointed out that there are three major categories of psychological and psychophysical traits that are fundamentally necessary for driving, (a) the sensory elements, (b) the central elements and (c) the response elements. In fact they are necessary for success in any way. Since it is known that a man could do nothing without some means of knowing what goes on around him, that he must recognize the relationships and remember what he sees and that he must be able to do something about the situation, it follows that any impairment of these capacities must reduce his efficiency to some extent.

Certain traits and capacities are more important than others and in the following we have tried to list the basic ones in order of their importance in driving.

1. Sensory mechanisms-windows of the mind.
 - a. Vision
 - b. Muscle sense
 - c. Touch
 - d. Equilibrium
 - e. Pain
 - f. Smell
 - g. Warmth
 - h. Cold
 - i. The organic sense-hunger, thirst, etc.
 - j. Hearing
 - k. Taste

These 11 senses - many people only think of five since Aristotle about 300 B.C. named five - contribute in some way to give us information about our surroundings. Some contribute only negatively like pain. It is of no particular value to a driver but a corn may distract one so that he will have an accident.

2. Central or brain elements. The general headquarters where all the interpreting is done and the orders are sent out.
 - a. Intelligence or alertness.
 - b. Knowledge - how and what to do.
 - c. Perceptual efficiency - how many things we can see at once or in a fraction of a second.
 - d. Our attitudes - feelings about certain things which govern what we do.
 - e. Emotions or states of mind which temporarily help or hinder our reactions.

LEARNING TO DRIVE SAFELY

PROFILE OF DRIVING ABILITY

Name _____ Date _____ Age _____ Sex _____

Maximum Score _____ Points Made _____ Percentage _____

| Rating | % Trait | Letter | Net Score | Profile | | | | | | | Estimate of Weighting | | Point Score |
|---------------------------------|---------|--------|-----------|----------|--------|---------|----------|---------|--------|--------|-----------------------|----|-------------|
| | | | | Inferior | | | Superior | | | | | | |
| | | | | 1 E | 2 D | 3 C- | 4 C | 5 C+ | 6 B | 7 A | | | |
| 1. Age | | | | | | | | | | | 3 | 1 | |
| 2. Health and physique | | | | | | | | | | | 5 | 2 | |
| 3. Blood pressure (Systolic) | | | | | | | | | | | 5 | 3 | |
| 4. Blood pressure (Diastolic) | | | | | | | | | | | 3 | 4 | |
| 5. Strength - Grip | | | | | | | | | | | 4 | 5 | |
| 6. Activity - Tapping | | | | | | | | | | | 5 | 6 | |
| 7. Reaction time - Complex | | | | | | | | | | | 6 | 7 | |
| 8. Accidents a year | | | | | | | | | | | 6 | 8 | |
| 9. Car - Years driving | | | | | | | | | | | 6 | 9 | |
| 10. Attitudes toward risk | | | | | | | | | | | 4 | 10 | |
| 11. Attitudes toward law | | | | | | | | | | | 4 | 11 | |
| 12. Knowledge of road law | | | | | | | | | | | 4 | 12 | |
| 13. Mental alertness | | | | | | | | | | | 6 | 13 | |
| 14. Driving speed | | | | | | | | | | | 5 | 14 | |
| 15. Neural stability | | | | | | | | | | | 4 | 15 | |
| 16. Manipulation | | | | | | | | | | | 6 | 16 | |
| 17. Observational capacity | | | | | | | | | | | 7 | 17 | |
| 18. Time for test - score | | | | | | | | | | | 3 | 18 | |
| 19. Color vision | | | | | | | | | | | 1 | 19 | |
| 20. Field of vision | | | | | | | | | | | 4 | 20 | |
| 21. Acuity of vision - R | | | | | | | | | | | 4 | 21 | |
| 22. Acuity of vision - L | | | | | | | | | | | 4 | 22 | |
| 23. Acuity of vision - B | | | | | | | | | | | 5 | 23 | |
| 24. Difference between two eyes | | | | | | | | | | | 3 | 24 | |
| 25. Distance judgement | | | | | | | | | | | 5 | 25 | |
| 26. Stereopsis - score | | | | | | | | | | | 3 | 26 | |
| 27. Eye dominance | | | | | | | | | | | 3 | 27 | |
| 28. Astigmatism | | | | | | | | | | | 3 | 28 | |
| 29. Glare | | | | | | | | | | | 4 | 29 | |
| 30. Phorias | | | | | | | | | | | 3 | 30 | |
| 31. Hearing | | | | | | | | | | | 3 | 31 | |
| 32. Recklessness | | | | | | | | | | | 6 | 32 | |

After the Measurements are Made, They are Laid Out
on the Profile Chart for Careful Study

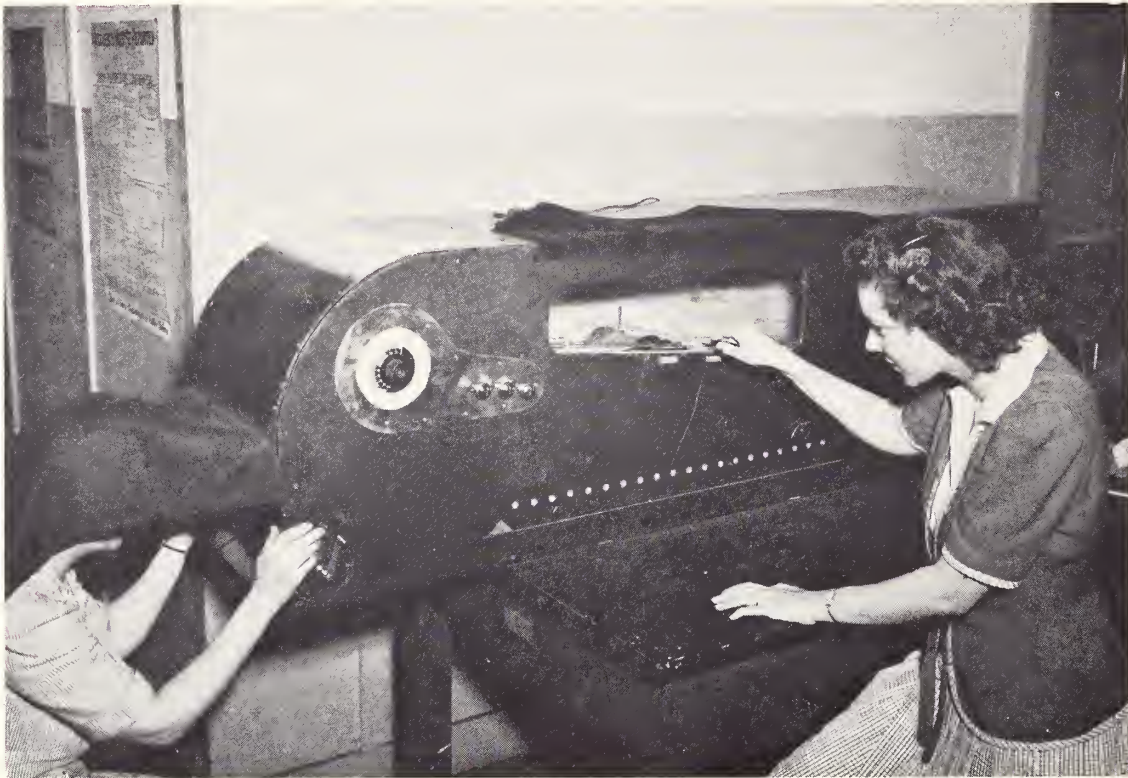
Measured traits are here graphed for a test driver of a large commercial concern. It is to be noted that he is above average in practically all traits and low only in three - attitudes toward risk, attitudes toward law, and driving speed. All three of these traits are in keeping with the nature of his work.

3. Responding mechanisms - muscles and glands which are the workers or the psychological mechanisms that turn the wheel, feed the gas, press the brake pedal or whatever the general headquarters may order.
 - a. Reaction - time - or the time it takes to get into action.
 - b. Speed of movement or motility which determines how fast we do things.
 - c. Coordination or the basic element of skill.
 - d. Strength.
 - e. Endurance.



Clason Visual Acuity Test

There are several tests and devices available for measuring vision, but such measures should be accurately made. It is desirable to know whether or not astigmatism is present, the degree of muscle imbalance, and other visual conditions which might affect driving under certain conditions. The fact that there are nine times as many cars running into trains at night as in daylight indicates the need for a great deal of attention to proper use and condition of vision in driving.



Test for judgment of distance and space perception.

Student's Report for Unit Two

Name _____ Date _____ Hour of Class _____

Section _____ Day _____

A. Write answers to the following questions from assignment with the reasons for each answer. (See F. above)

1. _____

2. _____

5. _____

9. _____

12. _____

13. _____

16. _____

20. _____

22. _____

25. _____

B. Sketches. Sketch radiator and show direction of water flow.

Scheme for rotating tires.

C. Procedures: State procedure for getting a permit.

D. Home Study: What driving, or other experience did you have this week with motor vehicles? Observe accidents, not passing, etc.

Graded by _____

Grade assigned _____

DEVELOPING TECHNIQUE AT THE CONTROLS

(Student's introduction to Unit Three)

You are now ready to secure greater finesse at the wheel. Many persons drive for years but still retain amateur driving habits. Others may develop smooth operation in a few hours. This is one of the most important lessons you have to learn.

The first step is mastery of the power-point. It is likely you have been bothered with this during the last two lessons. Look up a discussion of this in your text. Study the drawings of the clutch and the principle upon which it works. Remember you may release the clutch several inches and not cause any movement of the car. Suddenly, you feel a stoppage of the pressure against your foot. This is the power-point. The next half-inch of movement determines whether you start smoothly or roughly. If you release very slowly letting the clutch slip slightly you will make a smooth start. After starting take your foot off the pedal and place it on the floor. To "ride" the clutch after starting will wear the lining unnecessarily. Think this step through several times. Sit on a chair and hold your foot in the position it assumes on the pedal. Draw your foot back about 4 or 5 inches saying to yourself, "Now I am approaching the power-point." "Here it is." Then hold your foot still and imagine you are starting very, very slowly. Depress your accelerator. Now you are getting under way. Release a shade more. Now you are moving. Fine! Take your foot off the clutch and place it on the floor. By practicing five minutes a day at this exercise without getting into a car, you will speed up your learning by several hours. Getting the feel of the power-point is one of the most difficult steps in learning to drive. Master this principle now.

The shifting mechanism should next be studied carefully in your text. Note that it assumes the form of a letter H. Whether on the floor or on the wheel, all cars use this same system, except of course some of the newer hydromatic and fluid-drive types which are explained in a later chapter.

Remember, the clutch must be depressed each time before you shift. You must fixate this point properly! When starting from a standing position the clutch must be released slowly as described above. When shifting through the gears while moving it is usually necessary to shift and let the clutch out quickly. Be sure you note this point. Slow release of clutch when starting, rapid release when moving!

Be prepared at this lesson to start and stop smoothly with an empty milk bottle standing upright on a level place in the floor of the car. If you upset the milk bottle, either starting, stopping or turning a corner your manipulation is faulty. Try again and again to accomplish this operation smoothly until you can do it.

While accomplishing finesse in starting and stopping you should also give attention to steering, particularly turning. Remember when you turn a corner you must straighten out by "unturning" the steering wheel. Do not expect the car to right itself; since reversible steering, as it is called, is by no means universal on automobiles.

Imagine all lanes or roads as being divided into four channels, two fast lanes at the center for passing and two slow lanes at the sides for travel. You are to stay on the right side of the road and in your lane. A fundamental principle of all safe driving and road design is to avoid cutting lanes as much as possible.

Draw an intersection, mark it off and think where you should be when turning. It is necessary to turn the wheel rapidly at corners to stay in the proper lane. A fundamental principle: when approaching corners always slow down the speed, and turn the wheel rapidly and accurately to keep in your lane.

At this lesson you should learn all you can about tires; types, inflation, methods of detecting wear, precautions and other items pertaining to care of tires. Check your text for everything you can find on tires. Remember also to begin to notice everything outside the car and to give your hand signals regularly before turning corners or when changing lanes.

UNIT THREE

Learning the Finer Points in Starting and Stopping. Mastery of the Clutch

This is one of the most important lessons in driving. Mastery of the power-point is essential. It may require several lessons. It is best to intersperse other exercises like turning to keep the class motivated.

A. Objectives.

1. To give practice in shifting through the gears.
2. To develop a feeling of need for smooth operation.
3. To insure proper knowledge and mastery of starting and stopping skillfully.
4. To teach the principles necessary for proper care of the tires.

B. Approaches.

1. Actual experience with car on test lane.
2. Appeal to previous knowledge and observation of the student.
3. Readings on proper manipulation of the car.

C. Procedure.

1. Shifting from second into high gear. Pages 133-149 Sportsmanlike Driving.
2. Stopping from high gear. Pages 245-246 Sportsmanlike Driving.
3. Backing the car. Pages 319-320, Sportsmanlike Driving.

D. Evaluation. (Verbal and practical).

1. Practical test on following basis: (Milk bottle on floor.)

Suggested weighting of test.

| | |
|---|------------|
| a. Shifting smoothly. | 10 points |
| b. Accelerating smoothly. | 15 " |
| c. Stopping smoothly. | 20 " |
| d. Looking back (not in mirror) when backing. | 15 " |
| e. Use of hand-signals. | 15 " |
| f. Freedom from assistance. | 25 " |
| | 100 points |

Instructor should give each student-driver a rating and specific suggestions for improving himself.

E. References and reviews for notes.

1. Chapters XVII and XIX, Sportsmanlike Driving.
2. Pages 20-45 in Man and the Motor Car.
3. See back of Manual for special references.

F. Questions on Unit Three.

1. Why should hand signals be given at all times?
2. Should one release clutch suddenly when starting from low? Give reasons.
3. Should one release clutch suddenly when shifting from low to second? Explain.
4. Should one ever have both hands off the steering wheel at one time?
5. Should one let the motor run when a car is parked? Explain.
6. Should one ever step on the starter before depressing the clutch?
7. Should the motor be raced at any time? Give two or three reasons.
8. Can one holding a permit drive alone to get his license examination? Why?
9. Should tires be left exposed to the sun if possible to avoid?
10. Will oil affect tire wear? How?
11. What three ways can the front wheels be out of alignment?
12. Why will tires "squeal" turning a corner? Give two or three reasons.
13. Should the accelerator be used in backing on the level?
14. Should the lights be left on when starting a motor?
15. What other reason, than for safety, should the clutch be depressed when starting the motor?
16. Should one look at gear shift and pedals when operating a car? Discuss in a sentence. Where do dangers ordinarily originate--inside or outside the car?
17. Will a loose fan belt cause a motor to heat? Explain.
18. If the radiator freezes up what should you do? In garage? On the road?
19. If the valve or cock at the bottom of the radiator is opened and all the fluid drains out, will any car be safe from freezing? Explain.
20. Why should one avoid hitting rocks and small objects on the road?
21. How can a driver keep from hitting them?
22. If a tire is cut, what should be done?
23. When should a tire be recapped?
24. What is meant by flooding of the carburetor? What condition exists in the manifold?
25. How can such a condition be cleared out quickly? Give at least three possibilities.
26. What is a "vapor lock"? When is it most likely to take place?
27. How can you overcome a "vapor lock" when on the road?
28. If a car tends to wander when on the road how would you adjust the air pressure of the tires?
29. What are "life guard" tires? How are they made?

30. What are puncture-proof tires? Are they practical?

31. Why should all nails and metal pieces be removed from tires? Give two reasons.

G. Exercises in the car.

Check seat adjustment and pay particular attention to handling of the wheel. Work for smoothness in operation and placement of the car on roadway when driving. Also begin to observe stop signs, railway signs, etc. Be very strict about hand signals. Teach the learner to look both ways at corners. Circle field both to right and left. Use outside lanes of field, but emphasize proper right and left turns. Have students slow down before reaching corners. It may be desirable to shift to lower gear before turning.

H. Suggestions for Class work:

Care of the tires.

1. Inflation. Studies have shown that ordinary automobile tires will give least wear at around 35 pounds pressure. Manufacturers often make other recommendations to give better car performance and comfort.
2. Notation of the wear. If tires wear unevenly a careful study should be made. It may be improper inflation, mal-alignment, or improper wheel balance.
3. Dangers to tires. Besides under-inflation, tires may be damaged from hitting objects such as rocks, glass, clinkers, ruts, and other objects.
4. Types of tires. Besides the standard tires there are two commonly used types:
 - a. Double tube or life-preserver.
 - b. Puncture-proof.

The former has a double inner tube while the latter has a thickened surface of sponge rubber which will close up and hold air from ordinary punctures. The double tube tires seem to be most successful. The puncture-proof tires tend to heat.

Student's Report for Unit Three

Name _____ Date _____ Hour of Class _____

Section _____ Day _____

A. Write answers to the following questions from assignments with reasons. (See F. above)

1. _____
2. _____
3. _____
4. _____
6. _____
7. _____
8. _____
10. _____
12. _____
13. _____
16. _____
19. _____
24. _____
25. _____

B. Draw the cross-section of a tire having a Life Guard Tube.

C. Procedures. (a) Explain what you would do to overcome a "vapor lock" if travelling up a mountain.

(b) How would you drain a car to keep it from freezing and endangering the radiator or block?

D. Describe some driving experience you had this week. A trip you made, observation of drivers, help in changing a tire, observe a lubrication job, etc.

Graded by _____

Grade assigned _____



BACKING AND TURNING SAFELY

(Student's introduction to Unit Four)

Backing is a very small percentage of one's total driving experience but it is the most dangerous part. A few simple rules, and some practice, will immediately mark you as a trained driver. Remember the rear-vision mirror is not to be used when backing. You must look back to be sure the way is clear from all directions. You should glance over the left shoulder but also turn and look over the right shoulder in such a way as to see that the way is clear in both directions. Turn in the seat placing the right hand on the back. Steer with your left hand keeping turned so you can look out at the right, the back window and the left.

Move slowly and cautiously. It takes 1/2 second to move your foot from the accelerator to the brake. You may move far enough in this time to run over a child just back of your car. Try to back always without using the accelerator. Exceptions may occur, such as in soft earth or on a steep grade, but ordinarily it is entirely unnecessary to use the accelerator when backing.

When backing do not "over-steer," that is, turn the wheel too far at a time. The rear wheels will not move so readily from side to side, but after once starting to swing the car will move rapidly to the side and out of control if the steering wheel is turned too far one direction. Practice this until it becomes second nature. You should be able to drive backward slowly, turn corners and otherwise maneuver in a safe way. Backing completely around the field is a very fine exercise for developing control of a car and in developing self-confidence.

Make turns to the right and to the left going forward, noting that you always give a hand signal, watching for traffic back of you and at the side. One turning in front of another car is legally at fault and especially so if no hand signal is given. During this lesson you should make at least 10-12 turns to the right and to the left. In order to do this it is usually necessary to change directions on the field once or twice.

During this stage of learning to drive, you must begin to direct practically all of your attention outside the car. There should be no need for looking down at the gear shift, pedals, starter button or anything else except to glance at the gauges and speedometer when necessary. Remember there is nothing inside the car going to hurt you. All your dangers are on the outside.

Stop for octagonal (stop) signs, slow down and go into second for round (railroad crossing) signs, and slow up exercising caution for diamond-shape (curves, hill, etc.) signs. You are now developing habits that may mean your life later when on the highways. Learn to believe in signs and obey them implicitly.

Remember to keep on your side of the road at all times and to signal for change of lane when you are passing. Make your stops and starts so that others will have confidence in your driving. A driver does not notice rough starts and stops as much as the passengers. Practice with the milk bottle on the floor until it always stands while you are driving.

During this unit you should learn all you can about the care of finish on cars. Some require wax and some must not be waxed. Protection of the finish from weathering, mars and other damage is very important. You are never to touch stanchions or other objects while driving. It is a habit which will cost you money when you drive your own car into a garage or other narrow places. Almost any small dent or paint job will cost you \$10-25.

Never push a car with the bumper, or allow anyone to push you. Keep a tow chain or cable in your car at all times. A dollar tow chain may save you a sixty-dollar grill or a hundred-dollar repair bill on your trunk.

Drivers are judged by the condition of their fenders, and prices of used cars depend to a large extent upon their external appearance.

UNIT FOUR

Learning to Back and Turn Safely

One is legally responsible when backing and should become adept in this aspect of driving. It is best to turn to the right and place the right arm on the seat and thus observe in both directions as well as back of the car.

It is dangerous to use the accelerator. Keep your right foot near or on the brake at all times.

A. Objectives.

1. To demonstrate and practice the approved method of backing.
2. To teach the correct procedure in right and left-hand turns.
3. To develop mastery in maneuvering the car through zig-zag stanchions.
4. To teach principles making for the proper care of finish, and for the proper care and use of brakes.

B. Approaches.

1. Actual experience on the test lane.
2. Discussion of dangers in turning at various points.
3. Motion pictures, slides, or charts on correct and incorrect practices.

C. Procedures.

1. Review the gear maneuvers and simple backing.
2. Instruct as to the proper way to back, i.e., for safety, and also for student to demonstrate the principles of gear shifting discussed on pages 253-255, Sportsman-like Driving.
3. Have student back irregularly according to instructor's specified instructions using standard layout. Make at least two right-turn backs and two left-turn backs and one complex back.
4. Student makes turns as follows: (Sufficient to develop skill.)
 - a. Right-hand turns. (Emphasize getting into right lanes.)
 - b. Left-hand turns. (Emphasize getting into left lanes.)
 - c. Execute U-turns. (Emphasize presence of signs prohibiting U-turns.)
5. Have each learner drive forward and backward through zig-zag stanchions.

D. Evaluations.

- | | |
|---|-------------|
| 1. Amount of hold-over from last training period - retention. | 20 points |
| 2. Right backing. | 10 " |
| 3. Left backing. | 10 " |
| 4. U-turn in (no jumping of motor) immediate. | 10 " |
| 5. U-turn in low. | 10 " |
| 6. Right turn. | 10 " |
| 7. Left turn. | 10 " |
| 8. Zig-zag backward. | <u>20</u> " |
| | 100 points |

E. References and reviews for notes.

1. Chapters VI and XV Sportsmanlike Driving.
2. Pages 66-95, Man and the Motor Car.
3. Make sketches of hand signals.
4. Make sketches of turns.
5. See assignment sheet.

F. Questions on Unit Four.

1. Are U-turns legal in most cities?
2. Who is always responsible when a car is backing?
3. Why should one not use the accelerator in backing? Two reasons.
4. Why should one not use the rear-vision mirror in backing?
5. Why is it necessary to keep moving in a straight line, as nearly as possible, in traffic?
6. How can one avoid U-turns? What is a "real estate" man's turn?
7. Are U-turns between intersections ever legal?
8. How should one hold the gear-shift lever on the steering wheel when shifting? Illustrate and give reasons. Why is this necessary?
9. Which lane should one be in when making a right turn? When making a left turn?
10. What is meant by a "fast" lane of traffic?
11. What is meant by a "slow" lane of traffic?
12. What defect in steering when backing do most beginners have?
13. In case your car will not move backward without using gas what is wrong?
14. Where should your feet be placed when backing? Why?
15. If the pedal goes all the way down on hydraulic brakes and does not seem to work what would you do?
16. What should be done with the car in such a case?
17. In case your brakes should absolutely and completely fail on a hill what would you do to stop?
18. Why is it essential that you never touch the stanchions on the practice lane? Give two or three reasons.
19. In case you are in a close place and the motor idles too fast, what would you do? Will this injure the car? Should one ride the clutch on the road?
20. If you are going too fast as you approach a corner and you do not wish to, or cannot, decelerate the motor, what would you do?
21. What is a "policeman's" turn? Is it legal?

22. What other kind of turn do you know about? Diagram it by steps.
23. How can the finish of a car be best preserved? Do all finishes respond to the same treatment?
24. Why is violent braking to be used only in a dangerous emergency? Give two reasons.
25. Calculate the stopping distance in feet for each of the speeds:
 (a) 20 m.p.h. (b) 10 m.p.h. (c) 30 m.p.h. (d) 5 m.p.h. (e) 50 m.p.h.
 (f) 60 m.p.h. (Formula for stopping distance in feet is $\frac{\text{m.p.h.}^2}{10}$.) Do the same for ice which may have coefficient of friction of .10 or less.
- H. Take good care of your car. It is the most expensive thing you possess of a personal nature except your home.
1. Care of finish. Protection of the exterior is a good index of how well you care for your car in general. Consult your dealer as to the proper treatment of finish for the type on your particular vehicle. Some finishes should be waxed and some should not. Any foreign substance adhering to the paint should be carefully removed as soon as possible.
 2. Brakes. Your life depends upon your brakes. Keep them in good shape.
 - a. To avoid unnecessary wear let your motor do the braking whenever possible and slow down before you reach the stopping place.
 - b. Release handbrake when you stop.
 - c. See that adjustments and fluid are properly serviced.
 - d. If it is necessary to "pump up" brakes they need fluid or a new master cylinder or parts.
- I. Exercises in the car. This is a preparatory lesson to parking. Most of the time should be given to moving forward and backward through zig-zag stanchions. At least seven stanchions are set up 25 feet apart and with the apex of the base on a straight line 175 feet long. It requires judgment in spacing and skill in handling the wheel which can be developed most economically in this way. First drive through forward staying in second or low gear. Then have the learner back through slowly. If a failure is registered either way have them move to the starting position and try again. The whole period should be devoted to this exercise.
- Caution: The driver should never move on the base side of the stanchions. They should be alternated with bases set away from the line. Also, the learner should never touch the stanchions. It may be harmless here, but it may mean a fender in other places.

*The formula given is for about 80% coefficient of friction. If the coefficient of friction is 40% the stopping distance will be twice as great, 20% it is four times as great, etc.

Student's Report for Unit Four

Name _____ Date _____ Hour of Class _____

Section _____ Day _____

A. Write answers to the following questions from assignments with reasons. (See F. above)

1. _____
2. _____
3. _____
4. _____
7. _____
9. _____
15. _____
17. _____
18. _____
19. _____
23. _____

B. Sketch a "policeman's" turn. A proper turn of 180° .

C. Procedures. Describe the proper way to set up zig-zag stanchions and what to watch when backing.

D. Home Study. Describe some experience you have had during the week. As a pedestrian.
As a driver. Of some instance of bad driving.

Graded by _____

Grade assigned _____

PUTTING YOUR CAR WHERE YOU WANT IT

(Student's introduction to Unit Five)

To learn to discharge a gun is easy, but to be able to hit the bull's-eye every time takes years of experience. This is somewhat true of driving. You now have learned the essentials of starting and manipulating the car. The next five units will deal with precision in driving, parking, stopping, and observing traffic and traffic controls.

Precision driving can be learned without spending too much time practicing. On the other hand many persons who have learned in an unsystematic way may spend years in driving and be unable to do what you can do in the next five weeks. This requires study of the assignments in your text and the manual, carefully thinking through of the exercises before you try them, and practice under a teacher who knows just how much to help you and how much to leave to your own judgment.

There are at least four sets of exercises that will help you in accomplishing this skill, as follows:

1. Driving on a straight continuous line to keep the wheels at a given point in the roadway. This exercise requires a line at least 175 feet long painted on the pavement. It should be marked with a short cross-line at intervals of 25 feet. If not feasible to have a line, get 20 or 25 used tires. When laid 25 feet apart and edging an imaginary line you have an excellent setup for practicing this exercise.

It is best to start on the right side of the line of tires which are laid in the center and drive forward along the edge keeping a stated distance away. The instructor should tell you the distance to keep clear; two feet, one foot or six inches would be suitable. Have one of the class stand at one end and observe. He should give no signal or other aid unless you have failed entirely. In this case you should go back and try it over again.

After you have driven forward at a given distance from the tires, back up to where you started at the same distance or clearance. Next try the same exercises on the left side of the line. This is harder to do. When you can follow a straight line it is sometimes well to practice with curved line. (See DENGGER'S plan in the appendix of this Manual.)

2. If time permits set up two rows of old tires leaving two feet in addition to the car width clearance, and drive forward and backward through them until you can do it without touching at any point. Try the same with twelve inches, then with six inches clearance.
3. A third exercise is to set up pairs of old tires at different places on the driving range, either on each side of the car or so placed that one wheel can pass through without touching. A space three feet, two feet or less may be left between them.

Note. The purpose of these exercises is sometimes misunderstood. It is not to teach you to drive on the line which obviously is not allowed on the highway; but is intended to give you skill in placing the wheels where you want them in order to dodge nails, rocks, glass, old cans, chickens, small animals lying in the highway or other objects which may ruin your tires or even cause a severe accident.

4. Since a driver must always control himself in an emergency your instructor may deliberately give a sudden signal to stop or do something else in order to develop your presence of mind while at the wheel. Be prepared for it and make the most skillful stop you can without throwing passengers out of the seat.

There are many things to be learned about lubrication which will save you expensive repairs. Learn all you can about them at this period and if possible visit a first class service station and observe a lubrication job. (See form on page 122.)

UNIT FIVE

Developing Confidence in Driving and Mastery of Turns

A driver is judged as much by his turns as any one thing he does. Bad turning is responsible for a large number of accidents. To be a seasoned driver you must be able to handle emergency situations properly. This unit is directed toward these two points of mastery. Any repetition made in the objectives is purposely done for emphasis.

A. Objectives.

1. To develop assurance while at the wheel.
2. To introduce surprise situations to test the control of the driver.
3. To make right and left turns properly when in traffic.
4. To develop control and skill in placing wheels and car.

B. Approaches.

1. Stress, by lecture, need for proper confidence in oneself while driving. Give examples of situations when confidence prevented an accident.
2. Give instances (cite actual experiences) where the unexpected happened to the driver.
3. Instructor should demonstrate correct right and left turns in traffic using marked lanes on the training field if possible.
4. Give pupils an opportunity to ask questions regarding right and left turns, and give reasons for proper manipulation of turns in traffic.

C. Procedure.

1. Instruct student driver that he is to go completely over the driving course without any word from the instructor. This places the student on his own resources.
2. After the student has completely covered the course the first time, tell him that you will give him specific commands different from the ordinary routine when going around the second time. Introduce new situations as he goes over the field, i.e., tell him to stop at a new location, sound horn, make left turn in place of right, park by roadside, etc.
3. Test student specifically on his ability to make right and left turns in traffic.
4. Practice driving with right and left wheels on line both forward and backward.

D. Evaluation.

1. Allow 25 points if the learner successfully completes the exercise without help from the instructor.
2. Allow ten points each if student driver completes each surprise situation properly. (Minimum of 5 situations.)
3. Allow 25 points on correct right and left turns.
4. Allow 25 points for keeping within 12 inches of line. Let one of the learners get out of the car, observe, and report at end of line, not during the process of following it.

E. References and reviews for notes.

1. Pages 255-267, Sportsmanlike Driving.
2. Chapters VIII and IX, Sportsmanlike Driving.
3. Pages 96-109, Man and the Motor Car, (Revised 1944).
4. Sketch examples of correct and incorrect right and left turns that are found in street or highway traffic.
5. See back of Manual for classwork.

F. Questions on Unit Five.

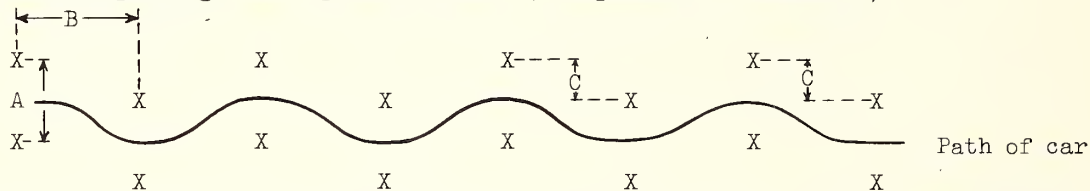
1. Why should light oil be used in winter? Give two reasons.
2. Why should a driver be able to handle his controls from touch without looking down inside the car?
3. Why is practice given in driving the wheels on a line when a driver must stay off the center line in traffic?
4. When turning a right hand corner, how far back should a signal be given?
5. Should hand signals be given at all times when changing the lane or avenue of traffic?
6. Which is the driving field most like so far as maneuvering is concerned? City driving? Highway driving?
7. In taking corners what speed should one travel in the country?
8. If driving 35 m.p.h. should you take corners at a lower speed?
9. Should one brake on the corner while turning? Discuss.
10. Will the front wheels right themselves on a corner? Why is it dangerous to assume they will?
11. Where should the thumb be when holding the wheel?
12. Why are 10 and 2 or 10 and 4 best positions for holding the wheel?
13. How fast would you drive along a line of parked cars if there are many pedestrians on the road? Why?
14. What should you do when overtaking a loading school bus on the highway?
15. On which side should you pass a standing streetcar?
16. What is the safety zone along a streetcar track?
17. On which side should you pass a standing trolley bus? A motorbus?
18. If it is necessary for you to pass children playing along the highway or street what would you do?
19. Can one see when the eyes are moving with the head stationary?
20. How can you be sure you have a clear right-of-way at an intersection? On the main street? What laboratory test is related to this ability?

21. When should the horn be used?
22. Suppose you had to stop very suddenly on a dry pavement. What would you do? Is it good for the tires? Brakes? Your passengers?
23. Why do people get car sick? Two reasons.
24. How large a part of a circle can you see around you with both eyes open? In degrees?
25. How much of a circle ahead do you see when one eye is closed? In degrees?
26. Do people see with both eyes all the time? Which eye can you see best with?
27. How long does it take to move the foot from the accelerator to the brake?
28. How far would you travel in $\frac{3}{4}$ second at 30 m.p.h.?
29. How far would a pedestrian travel when running across the street at 6 m.p.h.?
30. What is meant by "hand-over-hand" when turning?

G. Exercises in the car.

This assignment is mostly devoted to two objectives: (a) driving on the line with either wheel and (b) keeping presence of mind in emergencies. Have white line freshly laid out 175 feet long. Also at one side have a curved line for practice in getting into or out of crooked drives. Set up stanchions at one end of field for this purpose.

Offset stanchions should be used at this period as they are excellent preparatory exercises for parking. Set up as follows: (X represents a stanchion)



Distance A between the stanchions is 8', distance B from one pair of stanchions to the other is 25' and the offset distance C=6'. The driver takes the A, path of car through the stanchions forward several times. Then he tries it backwards in the same manner. The exercise is tedious to execute and must be done very carefully. Stanchions must not be touched. Drive in low gear.

H. Lubrication of your car. The main things to remember about lubrication are:

1. Follow your service manual carefully and see that there are no fittings which will be missed. Be sure there are no special points to be greased or oiled or that require a special grade of lubrication. Station attendants do not always know.
2. It takes several kinds of grease to do a good job on a car. What is good for one point on the car may not be good for another.
3. Winterize your car early and summerize it in the spring.
4. Be sure it is not over-greased.
5. Use as light oil as possible or as recommended by the manufacturer.
6. Use any type of detergent with discretion and, if used, have the crank case drained in a few hundred miles of driving.

Student's Report for Unit Five

Name _____ Date _____ Hour of Class _____

Section _____ Day _____

A. Write answers to the following questions from assignments with reasons. (See F. above)

1. _____
2. _____
3. _____
5. _____
7. _____
8. _____
9. _____
10. _____
14. _____

B. Diagram 5 steps in parallel parking. Label them A, B, C, D, and E.

C. Procedures. Describe the proper method of passing a school bus. A streetcar.
A trolley bus.

D. Home Study. Cite some article, cartoon, or other matter you have read, or accident you noticed in the paper. What experience did you have driving at home this week?

Graded by _____

Grade assigned _____



GETTING SPEED AND ACCURACY IN PARKING

(Student's introduction to Unit Six)

One of the most disturbing maneuvers to most drivers is parking. It is of primary importance to learn to park systematically for several reasons.

1. You will have more confidence in your driving ability.
2. It will save the fenders, bumpers and the radiator grill of your car.
3. It saves time. One skilled in parking should get into a space 6 feet longer than the car in less than 30 seconds. Some can do it in 15-20 seconds. Others will spend up to 15 minutes and still not be properly parked.
4. It is safer. The less time you spend at one place in moving traffic the less likelihood you will come into contact with another car.

The first step in learning to park is to analyze the movements you need to make with the car. These are well explained in the text under the caption parking. After you have carefully thought through every step there are three sets of exercises which will aid in your learning to park quickly and accurately. These will be described as follows:

1. Preliminary exercises known as the offset stanchions. Place at least 4 pairs of stanchions with the apex of the base 8 feet apart and the pairs spaced 25 feet apart. These pairs are offset six feet a distance of 25 feet apart. It is desirable and will save time to have more pairs of stanchions set up. Drive through these forward and backward until facility is obtained and you are sure of yourself.
2. Set up the stanchions for parallel parking to represent two parked cars with a space between 6 feet longer than your car from bumper to bumper. The outside stanchions should set 7 feet from the curb. An old piece of 4 x 4 or 4 x 6 lumber about 16 feet long should be laid down to represent the curb. If left outside it should be creosoted to protect it from weather.

You are to drive in and out of this space without touching a stanchion or making extra hitches or moves. While state and city ordinances differ, you should try to get your car within 6 inches of the curb if possible. Few states would arrest one parked within one foot of the curb but your car is less likely to be damaged if parked nearer than this distance. Some cities have places where the curb is high enough to damage the fenders, if you get too close. In such cases be extremely careful when parking.

Set your car in reverse and turn the wheels to the curb when heading down hill or with the wheels turned away from the curb when parked heading up hill. It is well to keep in mind that cars having "fluid-drive" will not stand on a grade unless the emergency brake is adequate to hold them. A special brake-locking device may be obtained as an accessory for certain of these cars and will hold the car securely. The "hydromatic" is locked in reverse while the "dynaflo" has a special parking position. Most cars with overdrive have free wheeling when in overdrive. Free wheeling is like a coaster brake on a bicycle. This means they may roll away when left standing on a slant unless the handbrake is very effective and properly set. It would be wise for drivers of such cars to keep two small 4 x 4 blocks in the trunk for blocking the car when parking or changing a tire.

3. For practice in angle parking set up six stanchions, three on each side, seven feet apart and with the apex of the stanchion set in to represent parked cars. These should set at an angle of from 30 to 60 degrees, as practice in different cities varies. In some wide streets with light traffic, parking at 90 degrees is required.

Drive up about one half car-length distance from the nearest stanchion until in a position to turn into the space. Variations in cars and angles make any specific directions relatively useless. Your instructor will guide you. Move in without touching the stanchions and barely touch the curb with the front wheels. A tire may be easily ruined by impact with the curb when angle parking. The steering mechanism is often sprung causing excessive tire wear.

Practice each of these exercises until you can do it easily and with confidence. Besides learning to park you are developing technique in maneuvering your car which will greatly aid you in the future.

UNIT SIX

Learning to Park Easily and Safely

Perhaps nothing complicates traffic flow more than inferior parking habits and skill. A good driver will park a car in from 15 to 20 seconds. Time yourself and improve your record.

A. Objectives.

1. To analyze and teach the proper method and skill required in parallel parking.
2. To analyze and teach the proper procedures in up-grade and down-grade parallel parking.
3. To teach the proper method and skills required in angular parking.

B. Approaches.

1. Demonstration by instructor. Have your instructor demonstrate the steps after you have diagrammed them in the class room.
2. Actual experience on the driving field of procedures outlined.
3. Discussion of various methods and details of parking; such as, when to set emergency, leaving car in gear, cramping wheel, seasonal parking, near alleys, and restricted zones. Also consideration of fluid-drive cars. It is best to carry 4 x 4 blocks to block the wheels. They are also very useful for holding the car when changing a tire.

C. Procedures.

1. Have student move 1-2 feet from car along side of another car or stanchion. Back into position of 45 degrees.
2. Have student park on side hill headed down. See pages 260-265, Sportsmanlike Driving.
3. Have student park on side hill headed up.
4. Have student park between stanchions and line.
5. Judgment problems:
 - a. Set up stanchions where there are no lines. Have student judge when they are far enough apart for him to get into parking position at an angle. Give three choices. Allow more credit for reasonably narrow stall.
6. Explain methods of parking on a hill. Do not practice this exercise until next lesson. See pages 329 and 448, Sportsmanlike Driving.

D. Evaluations.

- | | |
|--|-----------|
| 1. Parking parallel without error. | 20 points |
| 2. Parking parallel in less than 30 seconds. | 25 " |
| 3. Parking properly headed down hill. | 10 " |
| 4. Parking properly headed up hill. | 10 " |
| 5. Angle parking. | 15 " |
| 6. Leaving parallel parking space. | 15 " |
| 7. Leaving angular parking space. | 5 " |

E. References and reviews for notes.

1. Chapters X and XI, Sportsmanlike Driving.
2. Pages 108-121, Man and the Motor Car.
3. See reference list at back of Manual.
4. Require that each student be checked by tests in the driving laboratory and secure the learner's permit as early in the course as possible.

F. Questions on Unit Six.

1. Why should one learn to park quickly?
2. How much time should you require to properly park parallel?
3. Is it best to pull the front of the car in first when parallel parking?
4. In what gear should a car be left parked on a hill?
5. Why should a car be set in gear on a hill? Suggest exceptions.
6. Why is reverse a desirable gear to use? Two reasons.
7. If a car has an overdrive and it is set to be in overdrive, should one depend on the gear to help hold the car from rolling away? Why? Which car is an exception?
8. If one is under 18 and gets a permit or license, who must grant permission and what procedures are necessary?
9. How far may a car be away from the curb and yet be legally parked?
10. If headed down hill, which direction with reference to the curb should the front wheels be set?
11. If headed up hill, which way should the wheels be turned?
12. How close to a corner or alley may one park legally?
13. List 10 other places where parking is, or may be, prohibited?
14. Sketch out five definite steps in parking a car parallel to the curb.
15. How much space, in addition to the overall length of the car, should one have for successful parking?
16. How could you tell if a car is missing on one cylinder? How could you determine which one is missing?
17. In angle parking, what angle is ordinarily used?
18. Sketch out the plan to follow in angle parking. Draw in the cars on each side and 5 positions of a car parking.
19. Mention three errors which are usually made in backing? Can you cite any others?
20. What does a square highway sign mean? A round sign? A hexagonal sign? A diamond-shaped sign?
21. What is meant by double parking? Is it legal?

22. Why should the motor not be left running in a parked car? Two reasons.
23. How can you tell if the generator is not working?
24. Explain in detail what is meant by a "safety zone".
25. When backing, which driver is legally responsible? One car moving forward or standing.
26. Should the hand brake be set when properly parked?
27. If you were in a crowded city where would be the safest place to park?
28. If you park on a hill, how should the wheels be left? Up hill? Down hill?

G. Exercises in the car.

This lesson is designed to teach the use of skills so far developed in parallel parking. The instructor should begin by diagramming and describing the steps necessary in parking by use of sketches on the blackboard. The blackboard analysis of angular parking may also be shown. Call attention to the setting of gears, levers, and wheels when parking on a grade. Set up stanchions for parallel parking on one side and angular parking on the other side of the driving field.

H. Taking good care of your car.

1. The interior. A shoddy-looking car is depreciated a great deal in value. Keep the inside looking like new. Regular cleaning is necessary besides the need for care in keeping the cushions free from burns, stains, and other damage.
2. Cars should be equipped with 10 - 12 volt batteries. Six volt equipment on modern cars is too light and must be given every advantage to perform properly. Here are a few pointers:
 - a. Turn off your lights when starting the car.
 - b. Be sure lights are off at all times when not being used. Turning on lights when on a trip does not benefit battery in modern cars. They have automatic regulators.
 - c. See that all devices are attached to the ignition switch. When it is off others cannot be connected.
 - d. Batteries are rated from 120-140 ampere hours. Allowing for full efficiency, your lights will run them down in 6 - 12 hours if motor is not running. The same is true of a radio.
 - e. Keep the terminals on your battery clean and greased with white vaseline.
 - f. See that generator charge is set properly.
 - g. Have distilled water put into battery regularly. Ask your instructor for points other than those listed.



A unit type of testing and training device.

Student's Report for Unit Six

Name _____ Date _____ Hour of Class _____

Section _____ Day _____

A. Write answers to the following questions for assignments with reasons. (See F. above)

2. _____
4. _____
6. _____
7. _____
8. _____
16. _____
20. _____
22. _____
27. _____
28. _____

B. Sketch signs for the following: Indicate color of background.

- (1) Curve.
- (2) Railroad.
- (3) Residential district.
- (4) Stop.

C. Procedures. From the laboratory tests list four things you should compensate for.
Explain how you will do this.D. Home Study. Time some member of the family in parking. Do the same for yourself.
What experience with a car did you have this week?

Graded by _____

Grade assigned _____



DEVELOPING SKILL IN GETTING IN AND OUT OF CLOSE PLACES

(Student's introduction to Unit Seven)

Every driver finds himself in a very close place at times. Fear of moving traffic on the highways is mostly a psychological matter and will gradually subside with experience. Fear of manipulating in close places is mostly a matter of skill and requires a great deal of practice for high efficiency.

The exercises given in this lesson are very practical and important to develop the fine points of driving. Suppose you are on a mountain road and a bridge is washed out. It is necessary to turn around and there is a ditch on either side. Precision of control and confidence on the part of the driver is required to make a safe turn.

Again, you may have left your car in a parking lot, at a ball game or on the street while shopping. You return and find cars all around it with only space that might provide an escape if you are clever enough at the wheel. These situations frequently are met.

In addition, the more skillful you become in such close places the better you will be able to negotiate the garage when storm windows, lawn mowers and other articles are stored there. Inspection of garages and driveways will reveal ends pushed out, doors torn off, hedges mashed down along the drive and even bricks and boards off the house itself. All these are indications of only one thing--untrained drivers. A trained driver, even though he lacks skill at first, will go slow enough to do no harm even if he does come in contact with other vehicles or objects. This is accomplished by letting the motor run slowly and inching along by slipping the clutch.

On the latter point also a comment should be made. One parent was very disturbed to think we taught drivers to slip the clutch. Until he observed his own reactions carefully, he honestly believed that one never slips his clutch when driving. What he meant was that one should not "ride" the clutch when driving on the road as it will wear the surface unnecessarily and even burn it. The clutch is designed to "give" or "slip" when power is being applied, in order to give flexibility in maneuvering in close quarters.

The first exercise in this unit is learning to turn around on a slab 25 feet wide. Read your text carefully for full details but remember, you are to look, signal when clear and head across the road first. Second, back up to the proper point after reversing the direction of the front wheels to throw the front of your car to the left.

In all such close maneuvers two schools of thought exist: (1) one says, "Do not turn your steering wheel unless you are moving slightly", and (2) the other says, "Turn your wheels while standing if it saves you time." The first method tends to save your tires, the steering mechanism and your arms. The second will very often save you time and perhaps your neck. You will need to decide which is preferable. The important thing is that you do not loiter while across the road. An illegitimate turn known as the "boot-legger's" or "policeman's" turn reverses the steps above but is by all means to be discouraged for reasons your instructor will explain.

The second exercise of this unit is that of getting in and out of a so-called garage. Stanchions are set up so you start in and at one side of the garage, then pull over in front of a car parked on the other side. The exercise provides good practice at this level of advancement. Remember to observe every sign on the course during practice or you will develop careless habits which may mar your record as a driver.

UNIT SEVEN

Learning to Get Your Car in and out of Close Places

Most anyone can "herd" a car along the road if there is little or no traffic. Even a child operates his scooter, bicycle, or toy car with a reasonable degree of safety. It is the close places in traffic, getting in and out of the garage, etc., which cause most trouble for drivers. A driver needs to have considerable skill to keep out of trouble in emergencies.

A. Objectives.

1. To develop skill in maneuvering in close places.
2. To develop poise, confidence and emotional control of the driver.
3. To prepare in advance so that right and left turns may be made properly in traffic.
4. To develop mastery in the principles of angular parking.
5. To develop skill in driving between fixed objects on each side and to maneuver through close places in traffic.

B. Approaches.

1. Stress the need for a proper balance between caution and confidence while at the wheel. Encourage the learner to think through and anticipate hazards.
2. Cite experiences of your own where hazards were overcome by being properly prepared.
3. Give pupils an opportunity to review the motor code and give reasons for several traffic laws.
4. Emphasize slowing down before turning corners.

C. Procedure.

1. Have the driver plan a route to be taken and anticipate danger points in advance. He is to observe all signs and give hand signals as they should be given in traffic.
2. Have the class suggest specific maneuvers different from the ordinary routine as the driver goes over the field, such as; stop, give hand signal, sound horn, back up 100 feet, park by the roadside, etc.
3. Test pupil specifically on his ability to make right and left turns as he would do in traffic.
4. Give drill in making accurate parallel parking without bumping the curb. Use 4 x 4 for curb.
5. Use offset stanchions as described above. Four, five, or six sets or pairs spaced twenty-five feet apart. Each pair is to be spaced eight feet apart. Offset each alternate pair of stanchions six feet from a side line.

D. Evaluations.

1. Allow 25 points if the pupil successfully negotiates the driving course without any help from the instructor.
2. Allow 5 points each if student driver completes each surprise situation properly. (Minimum of 10 situations.)
3. Allow 25 points on correct right and correct left turns.

E. References and reviews for notes.

1. Pages 253-264 and 366-371, Sportsmanlike Driving.
2. Chapters XI and XVI, Sportsmanlike Driving.
3. Pages 112-139, Man and the Motor Car.
4. Review the steps for (a) parallel parking, (b) angular parking.

F. Questions on Unit Seven.

1. Explain how one should handle the wheel in turning a corner.
2. Why is the top of the radiator or a projection on the lamp or fender a poor guide for placement of car when driving?
3. Name three or four antifreezes which have been used and describe each. Give disadvantages of each type.
4. What should one do last in parking a car?
5. If you were to damage another parked car, what should you do to fulfill legal obligations?
6. If a wagon or other vehicle is moving slowly along the road, what should you do when passing?
7. How far should the vehicle's wheels be kept from the center line?
8. How much clearance does one have in entering the average garage?
9. Make a sketch illustrating correct right and left turns. Show the four lanes of traffic.
10. Should one pass at an intersection?
11. Is one to drive a car with one hand only? Why?
12. If you were going to pass another car going in the same direction, where would you look for other cars?
13. Why do some cars ride hard? What can be done about it?
14. How often should the crankcase oil be changed in a motor?
15. If your car is not used for a few weeks, what should you inspect before driving?
16. What are two very common faults of learners and beginning drivers? (One at corners and one in straight driving.)
17. Is it ever permissible to cut corners or drive on the wrong side of the road?

18. If you were to sell a car in your state, what happens to the license plate? What must you do to transfer a car? Is it the same in all states?
19. What is collision insurance?
20. What is hospitalization insurance?
21. If the lights flare up and then subside, what is the trouble?
22. How should lights be set in a fog? Discuss.
23. Should one smoke while driving? Discuss.
24. When one turns his head while driving, what is the natural tendency with respect to the wheel?
25. Where should the eyes be resting when driving on the open road?
26. What is the difference between property damage and personal liability insurance? Are they sold separately?
27. Are shock absorbers usually mechanical, or are they hydraulic?
28. What kind of grease should be used on the water pump?
29. What is usually included in a "tune-up" of the motor? When should it be taken care of, i.e., what time of the year?
30. What should the temperature gauge indicate during ordinary driving?
31. How much play is permissible in the steering wheel?
32. If the steering gear vibrates, what is likely to be wrong?

G. Exercises in the car.

Review of parallel and angular parking is largely the purpose of this Unit. The parking may be done incidentally in connection with other practice exercises. Practice further in driving forward and backward between offset stanchions.

H. Responsibilities of the driver in a legal way. See pages 366-371, Sportsmanlike Driving.

There are certain things in most states which a driver must do to get a driver's license. One is to drive according to local regulations. Still another is to have the car properly registered and equipped. A final one is to meet the requirements with respect to insurance. States differ but here are some types of insurance to consider and listed in order of importance to the driver.

| <u>Nature of Insurance</u> | <u>Who and What It Protects You From</u> | <u>Average Amounts</u> | <u>Approximate Cost (annual) on Small Car Varies with Locality</u> |
|--|--|------------------------------------|--|
| 1. Public Liability | Damage suits | 10,000 to 20,000 | \$15-45 |
| 2. Property Damage | Property damage to others as in No. 1 | \$5,000 to \$10,000 | \$3-9 |
| 3. Fire and Theft | You | Value of Car | \$6-10 |
| 4. Comprehensive Cover- age in Addition to Fire, Theft, etc. | You | Value of Car or part damaged | \$6-10 |
| 5. Hospitalization | Injury to you or others | Up to \$500 | \$5-7 |
| 6. Collision | Injury to your car | Value of Car | \$30-90 |
| 7. Road Bond | You | Amount of Bond | \$3 |
| 8. Theft Rental | You while your car is gone | Amount of Rent | \$1-2 |

Student's Report for Unit Seven

Name _____ Date _____ Hour of Class _____

Section _____ Day _____

A. Write answers to the following questions from your assignment with reasons. (See F. above)

1. _____
5. _____
6. _____
10. _____
12. _____
14. _____
18. _____
19. _____
24. _____
25. _____
26. _____

B. Sketch a section of the highway. Let X represent children going to school. Let Y represent your car and Z another car coming from the other direction. Trace your path in passing the children and indicate location of the other car at the time. Give distance in feet.

C. Procedures. Explain how you would go about cleaning out a radiator which tends to heat. Give a step by step procedure.

D. Home Study. Describe any experience you had this week pertaining to driving.

Graded by _____

Grade assigned _____



YOUR COMING DEBUT IN TRAFFIC

(Student's introduction to Unit Eight).

The first and most important part of this lesson has to do with learning to start, stop, and stand on a hill without rolling back. Recently a girl in the midwest stalled her car on a hill. Unable to make a proper start, she lost control, backed down into a stream, and drowned herself and three or four children. Only one child escaped by jumping through the window. A half hour's instruction and practice on standing and starting on a hill would have no doubt saved their lives.

While advanced drivers may short-cut the following steps under certain conditions, we recommend them without reservation to all amateur drivers and suggest that students learn to use them exclusively. Naturally starting on a steep hill requires more adeptness but the principles are the same. If your hand brake does not hold on a hill, get it to your garage and be sure it is set up to hold the car on any ordinary grade. Since most drivers learn by themselves and do not worry about the final step in starting--release of hand-brake--you will find many cars with ineffective hand brakes. This is one of the weakest parts of a modern automobile. Certain makes are designed so you cannot shift into second gear unless your hand brake is released. Some drivers put a buzzer or light on their so-called "emergency" brake--it is anything but "emergency"--to warn them when it is not released.

Assuming you have a hand brake which will hold the car, the steps to be followed are: (You are standing with the hand brake set and the motor running.)

1. Accelerate until the motor is running at a speed adequate to start you up the grade. This will vary with the road surface.
2. Release your clutch slowly until you reach the power-point and the car begins to quiver slightly.
3. Begin to release your hand brake gradually and at the same time release your clutch slowly and feed enough gas with the accelerator to take over the backward thrust of the car and start it forward. This is a delicate step and you will need to practice it carefully to avoid either of two possibilities:
 - a. Car starts to roll back down grade.
 - b. You will stall the motor.

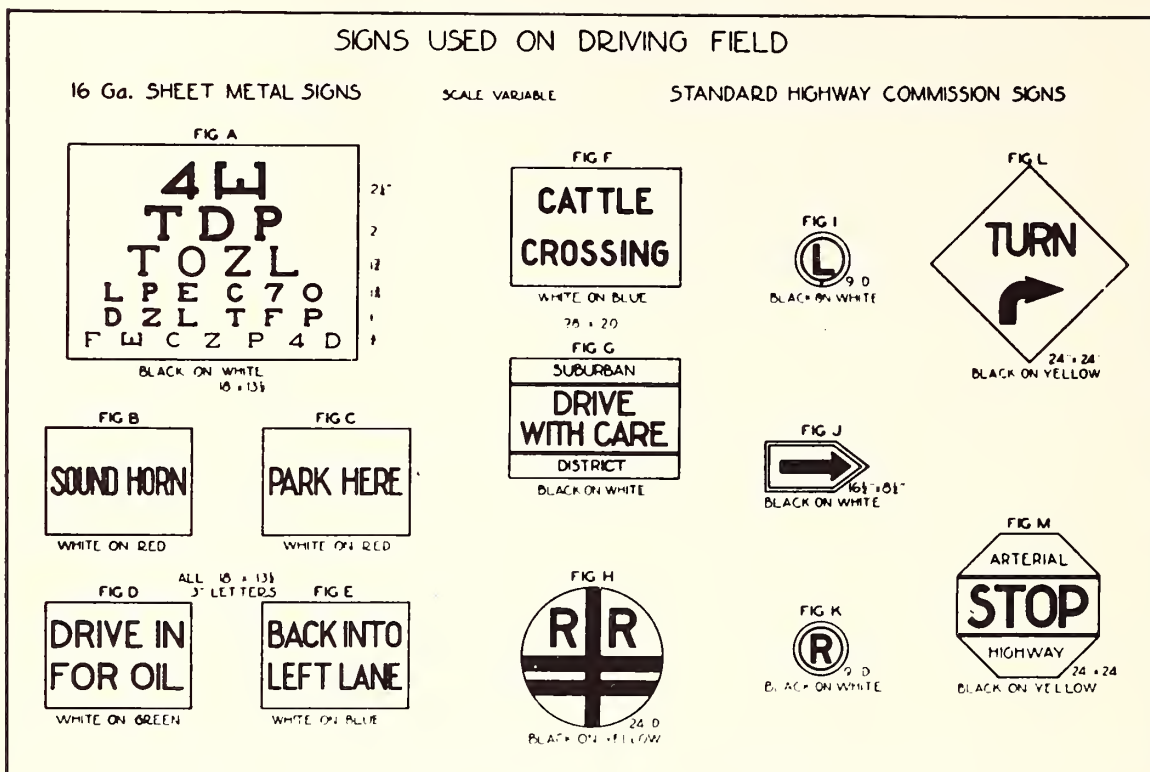
Either of these is bad and can be avoided with proper skill and coordination. Practice these steps carefully until you have them mastered. Try a mild grade first and after you have your license practice further on a steep grade until you can do this perfectly under all conditions. It is best to practice near the foot of the hill.

At this time you should also review your basic abilities and aptitudes as shown on psychophysical tests and try to think of ways to compensate for them. If your vision is poor drive slower and keep a sharp lookout all around you. If your vehicle is under control you will not hit cars you see. They may hit your car, but if you see them in time, you may even be able to get out of their way. Remember the axiom, "You will be just as dead if you were dead right." It pays to be cautious even though you are right.

Allow yourself more time if your reaction time or action time is slow. If you are timid or nervous do not allow yourself to get into a pinch. If sleepy or tired rest before driving further, get some strong coffee or stop over until the next day.

Keep in your lane at all times unless necessary to change lanes then signal before changing. Keep well behind other vehicles--about twice your stopping distance, which is the speed in miles an hour squared and divided by 10. Thus at 20 miles an hour this would be 20×20 or 400 divided by 10 which equals 40 feet. This would mean 80 feet behind other cars or about five car lengths.

Make stops slowly and carefully after giving distinct hand signals. Stop for all signal lights and observe traffic signs and warnings. Determine in advance where you are going, the route, etc., and try to avoid heaviest traffic. You will thereby greatly reduce hazards that may be met.



Traffic Markers and Signs

A complete set of state and federal highway signs on the driving field. These familiarize the learner with standard markers.

UNIT EIGHT

Preparing for Traffic and Road Driving

Before taking full responsibility for a car a reasonable amount of apprenticeship is helpful. This Unit is designed to fulfill the part of such training.

A. Objectives.

1. Mastery of hand signals and observance of traffic signals.
2. To call attention to the hazards of driving and how to avoid them.
3. To give experience on different road surfaces and on hills.
4. To teach the proper procedures in starting on a hill.
5. To make the learner aware of his basic capacities, or the lack of them, and how to compensate for his deficiencies.

B. Approaches.

1. Discuss importance of skill in maneuvering in prevention of accidents. Emphasize the fact that skill does not mean "stunt" driving.
2. Explain why safety pays.
 - a. Discuss and quote figures on damage cost of accidents and who pays the bill.
 - b. Can you afford to pay for your damage?
 - c. Discuss and show pictures of traffic situations. Try to analyze them. Film on "Drunken Driving".
3. Practical work.
 - a. Road driving for those with permits. Give experience on hills and on various road surfaces.

C. Procedure.

1. Building up attitudes.
 - a. Cite instances and consequences of lack of driving skill.
 - b. Check on age of students and whether or not they have their learner's permits. If not, find out why and encourage them to obtain permits.
 - c. Give attitude tests. See Appendix.
2. Cost of accidents.
 - a. How much has an accident cost some friend or member of the family?
 - b. Could they well afford it?
 - c. What provision is made for the poor man who couldn't possibly make a damage payment? (Insurance.)
 - d. Be sure students can answer questions as to liability of all parties in an accident--driver, owner of car, legal guardian of a minor, limits of insurance coverage.

3. Driving practices.

- a. What is meant by the term "driving ahead"? Develop this point and try to make an observant passenger of the student. (They will ride more than drive for some time yet.)
- b. Does the driver avoid situations such as these:
 - (1) Getting caught behind truck or slow car on hill?
 - (2) Getting caught at successive red lights?
 - (3) Coming on unexpected curves, dips, or changes in road surface?
 - (4) Any situation that requires haste to maneuver properly?
- c. Try to develop pride in skill at sizing up traffic situations and always being right. (The right place at the right time.) Use Stoner Traffic Board. See Appendix.
- d. Deliberately make pupil critical of anyone who is not using good practices. (It is one approach we have to the driver already on the road.)
- e. Try to develop assurance as to right-of-way, when to turn, where and what to do in case of doubt. Illustrate, by diagrams, the best method of turning.

D. Evaluation.

1. Check the skill and advancement of the driver by the Rogers-Lauer Scale. (See Appendix.)
2. Subjectively try to think in terms of what the pupil should be doing automatically after driving 5000 miles.

E. References and review for notes.

1. Pages 265-268, Sportsmanlike Driving.
2. Chapter XX, Sportsmanlike Driving.
3. Pages 140-162, Man and the Motor Car.
4. Review completely the state manual on road laws.
5. See references in back of Manual.

F. Questions on Lesson Eight.

1. Why should one stop at all stop signs even when no danger exists? Two reasons.
2. Why should a driver be able to drive his car automatically? Does this mean he need not pay attention?
3. Outline the steps for starting a car on a hill. Which is the most critical step?
4. What particularly should be avoided when starting up hill? How?
5. List 10 incorrect practices you have noted in other drivers.
6. Why should a beginning driver not exceed 25-35 miles an hour for several thousand miles?
7. How do you rank on distance judgment? When is this ability valuable?
8. Which eye do you tend to use?
9. Which side might you fail to notice on approaching car?

10. How can you be sure to see approaching pedestrians or vehicles on either side? Why?
11. How wide is your field of vision in degrees?
12. Will your field be this wide when you are tired? When you are sleepy? When you are busy with driving at road speeds?
13. What is scotoma? Does one have such naturally? In which eye?
14. If one were involved in any kind of accident in the country, would he need report it? Under what conditions and to whom?
15. Suppose the accident happened in a city. To whom should it be reported?
16. How far behind another car should you follow ordinarily? Calculate distance between cars at 20 m.p.h., 30 m.p.h., 50 m.p.h., and 60 m.p.h. (On dry pavement.)
17. Is a safe stopping distance the minimum? Why? How does it vary with conditions of the roadway?
18. Make a list of 10 common violations. See Accident Facts for your own state or by the National Safety Council.
19. Could one be arrested if he doesn't have his driver's license with him?
20. How long would it take to move your foot from the accelerator to the brake and apply brake? How far would you travel at twenty miles an hour?
21. Should one always consider the main right-of-way as being clear when he is approaching a stop-street?
22. In case of an accident is the person to blame always the most seriously injured?
23. What is meant by defensive driving?
24. Do you rate high mechanically? A, B, C-plus, C-, D, or E? What should your rating indicate to you?
25. What age groups are most likely to have accidents when driving? Could persons in this age range be safe drivers if properly trained?
26. How many persons are killed annually by automobiles? What per cent are pedestrians?
27. At what places would you need to be very careful of pedestrians? How can you be careful?

G. Exercises in the car.

This is partly a review period and should be devoted to the weakest points of each learner. All should be given the chance to start on a hill. (Set up field as needed with white line renewed.) Review class periods covered. Start using cross roads and teach traffic circle (always to the right) in this lesson.

H. Newer devices for traffic controls.

1. Traffic lights.
2. Traffic circle.
3. Clover-leaf.
4. One-way streets.
5. Superhighways.
6. Newer light signals: flashing lights, walk signal, arrows, etc.

Instructor should cover each of these points and use models if possible.



Types of Roads and Road Surfaces

Every driver should learn of the inherent dangers in driving on certain types of roads. The pavement at the upper left is a type of improved bituminous roadway which is more or less slippery when wet. That at the upper right is very treacherous and extreme caution should be exercised in use of the brake, especially when hot, wet, frosty, or if covered with ice film.

The surface at the lower left has been treated with a moderately coarse aggregate which gives fairly good traction unless covered with sleet or ice. Lower right shows a coarse aggregate which gives good traction under any ordinary conditions.

Over-use of the brake, even though done safely, greatly increases tire wear and necessitates premature relining of the brakes.

Student's Report for Unit Eight

Name _____ Date _____ Hour of Class _____

Section _____ Day _____

A. Write answers to the following questions for assignments. Give reasons. (See F. above)

2. _____

7. _____

9. _____

10. _____

15. _____

17. _____

22. _____

25. _____

26. _____

27. _____

B. Make a drawing showing your own field of vision. What would it probably be like if you were tired?

C. Procedures. Discuss the steps you would take if caught on a mountain road with a vapor lock.

D. Home Study. List 10 articles or other reading you have done this week on highway safety and driving.

Graded by _____

Grade assignment _____



GROOMING YOURSELF FOR TRAFFIC DRIVING

(Student's introduction to Unit Nine)

You have now completed all the minimum essentials of safe and sane driving. If you use good judgment and caution, you should not only obtain the satisfaction of driving with confidence, but you should also be recognized as a good driver by other drivers. Licensing examiners, friends and relatives of drivers properly trained are loud in their praise of superior performance usually displayed. Studies have shown that your chances of accidents are reduced about 75 per cent over what they would be if you had not received training, and perhaps the danger of serious accidents 90 per cent.

The first step in launching a safe driving career is to be sure you have mastered all the steps and principles taught in this course; and second, you should resolve that you will practice them religiously. Everything you have been taught is based on past experience of other drivers. There are no purely vague-opinion concepts used. Those who have not studied driving may have opinions of their own. No doubt this diversity of opinion is partly responsible for 30,000 to 35,000 highway deaths, nearly half a million permanent injuries, and over a million minor injuries annually. Certain studies of a well-policed and controlled area, indicate our fatalities from motor vehicles should not run over 7,000-8,000 a year.

Besides the necessity for further practice in smooth starting and stopping, proper turns, position at the wheel, observation of traffic and traffic warnings and markers, parking, starting on a hill and observing signals, there are certain things you should think through carefully before going on the highways by yourself. A review of Section VIII in the Manual would be of a great deal of value to you at this time. Study each of the 26 items in light of what you have learned from the Manual, your text, outside readings, or from your instructor. If there is any doubt about any of them, ask that it be explained. Study accidents described in the newspapers, and try to assign causes and ways in which the collision might have been avoided.

Some common errors made by inexperienced drivers are listed below. These account for many of the failures to pass the drivers licensing examination.

1. Failure to give distinct hand signals.
2. Not bringing the wheels to a definite stop at a Stop Sign or signal. (This is legally necessary in most states.)
3. Wide right turns--swinging out into the other lane.
4. Cutting corners on a left turn--getting into the other lane.
5. Failing to get into the right lane by signalling in sufficient time before turning.
6. Failing to get into the left lane by signalling in time before turning left.
7. Allowing car to roll when standing at a Stop Sign or signal. Keep your foot on the foot brake to hold the car.
8. Weaving in traffic or crossing theoretical as well as marked lane lines.
9. Sudden stops and killing of the engine. Be sure to release clutch before the brake is depressed to stop when driving slowly.
10. Jerky starts and stalling of the motor.
11. Failure to look both ways at intersections and using rear vision or side mirrors or failure to yield right-of-way when legally or otherwise necessary for safety.
12. Rushing into a dangerous situations. Stop and wait at side of street if there is a congestion of vehicles or pedestrians ahead. At least slow up and drive carefully as you pass.
13. Crowding pedestrians at crosswalks.

14. Actual contact with other vehicles, fixed objects or pedestrians.
15. Excessive speed--at least too fast for conditions.
16. Failure to slow down before reaching a corner.
17. Driving to the place of examination alone or on a permit which allows you to drive only with a licensed driver.
18. Lights and other legally required equipment out of working order.

There are other things which could be mentioned but these will suffice to help you review for your first trip into traffic. It will be easy to negotiate if you observe closely, know what to do and have sufficient skill to perform smoothly.

UNIT NINE

Further Principles of Traffic Driving for Practice

No one ever becomes a perfect driver. It is necessary to practice certain things which you wish to fixate permanently. This Unit is designed to help prepare for the driver's license examination as well as for a successful driving career.

A. Objectives.

1. To improve the learner's technique in control of the car preparatory to road driving.
2. To teach the theory and use of the clover-leaf as a traffic safety device and expediter of traffic flow.
3. To cultivate close observation of signs, and other conditions outside the car, necessary for safe driving.
4. To develop individual responsibility for manipulation of the car on the road. It would be advisable for those who are qualified to make the round of the driving field by themselves, all other learners remaining at headquarters or following in another vehicle and scoring the driver on his performance--solo driving. The instructor should be sure the person is qualified to handle the car.

B. Approaches.

1. Analyze the clover-leaf in class and show reason for various turns.
2. Discussion of the extent of use of clover-leaf. Use motion pictures if available to show modern highways.
3. Instructor demonstrates and has each learner verbalize the use of the clover-leaf calling attention to the various turns and avenues of traffic.
4. Use some form or model such as Stoner's Traffic Board.

C. Procedure.

1. Actual field practice in use of a small-size one-plane traffic circle and clover-leaf.
2. Allow each learner who is qualified to take car around field alone once. Class can follow a safe distance in truck or other training vehicle and score learner according to evaluation plan below.
3. Get class to discuss each other's driving while observing.

D. Evaluation.

Use following plan for scoring each driver on trip around driving field. Mark zero for failure to do proper practice, five points for faulty execution and ten points for satisfactory performance.

1. Getting into right lane when turning corner.
2. Slowing up before reaching a corner.
3. Starting smoothly.
4. Hand signal for right turn.

5. Hand signal for stop.
6. Keeping in proper lane when turning--neither cutting corner nor swinging wide into opposite lane.
7. Looking both ways at railroad.
8. Hand signal for left turn.
9. Hand signal for changing lanes.
10. Holding foot on brake when standing.

E. References and review for notes.

1. Pages 414-427, Sportsmanlike Driving.
2. Chapter XXI, Sportsmanlike Driving.
3. Pages 163-186, Man and the Motor Car.
4. Review road laws for your state and note items which confuse you.
5. Ask instructor to explain anything you do not understand.

F. Questions on Unit Nine.

1. Where are traffic circles and new type highway controls most frequently encountered?
2. Are they decreasing or increasing in general usage?
3. Why is it necessary to give a signal when changing lanes? Do the laws require it?
4. Why should a car be kept from rolling when standing with motor running? Will pressure on the brake be of any value?
5. If you approach several vehicles congregated in the road but your lane is clear what should you do?
6. Does the road law cover practices in this respect? (See Question #3.)
7. At what age can one legally drive in your state?
8. Do traffic laws apply to persons from another state?
9. Will you need to follow traffic laws in other states to avoid fines?
10. Why is the clover-leaf a safety feature in highway construction? Give at least two reasons.
11. Are you legally responsible when backing your car?
12. Where should your feet be when backing? Why? Give two reasons.
13. Can one U-turn (reverse direction) at all intersections? Discuss.
14. Where are traffic markers placed with reference to the points raised in Question 13?
15. Should one sound his horn for pedestrians? Under what conditions may this be done and how?
16. When at the wheel, how would you know if your right front tire were low? Left front?

17. How could you tell if one of the rear tires were low when driving?
 18. If an accident occurs what procedure does the law require? Would this be necessary if you were not at fault?
 19. What is meant by "fixing" a ticket?
 20. Do all parents guard their children carefully from traffic? If not how does this affect you as a driver?
 21. Are commercial vehicles more dangerous than private automobiles as shown by accident records?
 22. Which direction do you turn when entering a traffic circle?
 23. What is meant by an "inside turn"? Outside turn?
- G. Exercises in the car. This period should be used to develop confidence in the driver and to prepare him for road driving and the driver's license examination. It should be devoted to consideration of individual needs of the group. Below are a few suggestions:
1. Attention to clutch.
 2. Backing on curves.
 3. Skill in placing the car accurately.
 4. Turning around on a 25-foot pavement.
 5. Starting on a hill.
 6. Parallel parking.
 7. Angular parking.
 8. Getting into an outside (stanchion) garage.
 9. Stopping at crosswalks. (Nose down.)
 10. Ease and relaxation at wheel.
 11. Observation of signs.
- H. Class work.
1. Discuss road laws and point out those that may be confusing to drivers.
 2. Go over Section VII, of Manual carefully and give illustrations of how and why each is a dangerous practice and is undesirable.
 3. At what distance should headlights reveal persons and objects according to law?
 4. Discuss the unusual conditions of mountain driving.
 5. What are some of the special hazards of winter driving?
 6. Discuss them in relation to safety.
 7. Discuss at least 15 methods and markings of the pavement to aid in regulating traffic.

Student's Report for Unit Nine

Name _____ Date _____ Hour of Class _____

Section _____ Day _____

A. Write answers to questions from assignments with reasons. (See F. above)

1. _____
3. _____
4. _____
5. _____
7. _____
10. _____
13. _____
15. _____
16. _____
17. _____
18. _____
21. _____

B. Draw traffic circle and show direction of travel.

Draw two types of lane lines: (a) one you can cross, (b) one you cannot cross.

C. Procedures. Explain how you would drive on a road with loose gravel at the sides.
If approaching a hill.

D. Home Study. What practice did you get at home? Give details.

Graded by _____

Grade assignment _____



A JOURNEY THROUGH TRAFFIC

(Student's introduction to Unit Ten)

Everyone around you is your friend. They do not want accidents and, comparatively speaking, rarely cause accidents. Particularly, trucks and buses are manned by experienced drivers. Do not be afraid of them. You probably know as much about your car and the basic principles of driving as many of the drivers you meet. Your only need is to be cautious.

If your car has enough gas, water, oil, a charged battery, good tires with proper inflation, and good brakes, you can travel safely if you use your knowledge, skill, and intelligence to help you over the rough places. Check all the items listed above before you start on a trip. Being short of gas, or having a dead battery in a down-town congested street is anything but a safe situation. The same is true of the other essentials given.

Try your brake. If the fluid is low you may need to "pump it up" by several movements as the first down stroke may not take hold or stop you. In case it requires pumping up, take it immediately to a service station and have the brake fluid replenished. If this does not help take it to a good mechanic at once.

It would be well to review certain laws of your state. Where should you stop to change a tire? How far can you park from an alley or fire plug? How long can you park on main street? Who has the right-of-way at an intersection? Must one have his driver's licence with him at all times? Can one pass other cars at intersections? Can you turn right on a red light? What do flashing red signal lights mean? Flashing orange lights? What are you supposed to do at a railroad? At a traffic circle? At a clover-leaf? Can you U-turn between intersections? U-turn at intersections? What is your local speed limit? Is it an absolute speed limit, a basic speed law or a prima facie speed law? If you don't know the difference between the latter three ask your instructor.

How close should you be from another car before lowering your headlight beams? Are spotlights legal? When may fog-lights be used? What should one do in case of an accident? Most motor vehicle departments distribute manuals on all these and many other points of law. Remember ignorance of the law excuses no one.

There are certain trade secrets or tricks in driving. For example, when driving in the country stay well to the side of the road or pavement. When on loose gravel or dirt roads you may crowd the center as long as the way is clear ahead. When in a storm or going over a hill stay well over to the right. It is much safer and if someone should run into you the law will be on your side.

In a crowded street it is better to hug the center unless there are cars coming. Moving along close to parked cars is always dangerous. Pedestrians may rush out in front of you, wide doors may open from parallel parked cars, or angle parked cars may move out suddenly in front of you. Give them a wide berth.

If you feel you are going to meet someone on a narrow bridge either speed up and arrive first, or slow down and let the other fellow pass through first. The latter is always a safer practice for inexperienced drivers. The same practice holds for herds of animals, pedestrians, slow-moving farm vehicles, or bicycle riders. Pass them only where you have the whole roadway in which to dodge, if the way is clear ahead.

When following a heavily loaded truck through hills follow at a safe distance. Try to pass him at the first opportunity or stop and get refreshments while the truck gets ahead of you. Never depend on the blinked lights of a truck driver to assure you of safe place to pass. Depend only on your own eyes.

On wet pavement, snow or ice reduce your speed as much as the traffic will stand. It is best to move along with other traffic, but stay at a safe distance behind. When

applying the brake, apply it lightly and safely as you get maximum traction when the wheels are rolling. Whenever they start to skid release brake then apply it again. If icy you have to use it very carefully or a skid may throw you crosswise of the road. A careful re-reading of your text will bring out many other points you may have overlooked. Good luck and safe motoring!!

Note: Read the section on newer devices very carefully. A number of different controls and shifting devices are now being manufactured.

UNIT TEN

New Types of Intersections and Traffic Driving

Anyone who can handle his car well and who understands and observes the meaning of traffic signs will have little trouble in traffic driving. He should study newer traffic controls and know how to negotiate them.

A. Objectives.

1. To perfect exercises for control of the car under driving conditions.
2. To familiar the student with the routine usually followed in the driver's license examination.
3. To develop greater confidence and precision in manipulation of the car.
4. To call attention to the hazards of traffic driving and ways of avoiding danger.
5. To give actual road practice in traffic.

B. Approaches.

1. Demonstration by the instructor of plastic and miniature models of types of intersections.
2. Actual driving through lanes of a model clover-leaf in one-plane diminutive construction on driving field.
3. Review of principles for safest and most acceptable driving practices. (See Section VII.)
4. Traffic and highway driving with staff member.

C. Procedures.

1. Show miniature clover-leaf and explain the theory of "slow" and "fast" lanes as they apply to the design of the clover-leaf and other intersections.
2. Discuss very thoroughly the principles of good driving and have supervisor ride with student in actual road practice through traffic.
3. Have learners negotiate the clover-leaf for both right and left turns. Explain that to get grade separations and keep traffic speed at proper rate of flow, an actual clover-leaf may cover space nearly the size of the driving field. Let them score each other on certain points outlined by the instructor.
4. Staff member will accompany the group through traffic and on the highway. (Permits to be presented before getting behind wheel.)

D. Evaluations.

1. Instructor should score each driver on the Rogers scale. (See Appendix B.)
2. Give final test on all readings assigned during the course. Attitude tests will be used as needed.
3. Check on your class lectures as per outline. This may be either oral or written. Check on student's notes for form and quality using a rating scale of objective nature. Total the work handed in and record grades.

E. Reference and notes review.

1. Credit students should present scrap-book or term paper along with notes taken in the courses or other assignments.
2. Chapters XXII, XXIII, and XXIV, Sportsmanlike Driving.
3. Review motor code if you do not have a permit. This booklet deserves review occasionally by every driver as the laws are often changed.
4. Pages 187-268, Man and the Motor Car. Revised.

F. Questions on Unit Ten.

1. Where are traffic circles most frequently found? What section of the country?
2. How should brakes be used on an icy or slick pavement?
3. What is a safe distance that one should follow other cars? Is it always the same when speeds vary? When road surfaces vary?
4. Are STOP and other signs or signals always located in the right place? Are they always easily seen? Cite some examples.
5. Where, at the side, should one stop at a STOP sign? Is it necessary to stop more than once?
6. Why should one come up to an intersection slowly and try to hurry out, once he has safely entered it? Give statistical reasons for your answer.
7. Are good drivers (very skillful) always the same as safe drivers? Why?
8. Why do we ask you to show your permit before going on the road?
9. Why should one keep his eyes on the road in the distance when driving on the highway?
10. If children are walking along the road what should you do? If you are about to meet another car where the children are walking, what would you do?
11. Under what conditions could you use a Minnesota license in California? A Massachusetts license in Alabama?
12. Name 10 things on which a patrolman might fail an applicant for a driver's license. (See Section VII.)
13. When you go for your license would it be best to drive the family car there alone?
14. How far should you park from a hydrant?
15. If you see no marker how fast should you drive past a school?
16. Suppose while you are driving you smell something hot or burning. What would you look for? Mention at least six things. Should one carry a fire extinguisher in his car?
17. What would you do at a railroad before driving across? Name at least one.
18. If a fire engine should come down the street as you are driving, what would you do?
19. Suppose a sudden rain or snow storm blinds you. What would you do when driving?
20. If a blinding light approaches at night how can you make it easier to see the road?

21. Operate the so-called "dimmer" switch, at what distance from an oncoming car should lights be depressed?
22. Which car has the right-of-way at an intersection? What is the safest rule in this respect?
23. If your front wheel drops off the shoulder of a pavement what should you do?
24. Review the steps for starting on a hill. Verbalize them in your room and go through these steps in pantomime. Why is this important?
25. Are fog lights extremely valuable? What is a practical substitute in very foggy weather?
26. When going down a long steep hill, what should one do? How can this be accomplished if you are travelling quite rapidly as you come to the hill? How will the over-drive on most cars affect this?
27. Will hydraulic brakes always work evenly on all four wheels? If brakes do not work evenly what is probably wrong? What can you do to correct it?
28. What would you do in case of "vapor-lock"? Describe the condition that exists and give three ways it can be overcome so you may proceed.
29. What is meant by a fluid-drive? Which cars have it? (See Section XII.)
30. What is meant by a "booster" shift? Which cars have it? (See Section XII.)
31. How does an electric gearshift work? Which cars have used it? (See Section XII.)
32. How can a coil give you trouble? Give some of the symptoms.
33. If the points in your distributor (locate them) are bad, what will happen? Could you get home with the car?
34. Suppose your spark plugs are fouled up? Show how you would locate the bad plug? How ought it to be cleaned?
35. What is meant by "camber"? "Caster"? "Toe-in"? Explain the effects that might be produced from these conditions.
36. What is the purpose of an over-drive? How is it used? (See Section XII.)
37. What is a hill-holder? Explain how it works.
38. How can you tell if your steering wheel is loose enough to require attention? Explain how you can test it.
39. What part of the steering mechanism of any car with 20,000 miles or more needs careful inspection? How can this be done?
40. Is lubrication of your car universal joint regularly taken care of by having the car greased?
41. Explain what is meant by "packing" your wheel bearing.
42. What is meant by "shimmy" in a car? What will cause it?
43. If you have heavy oil in the fall and it turns cold suddenly, what could you do to keep your car starting more easily without changing oil?
44. What are some of the danger signals to be observed in hydraulic brakes? Why should the hand brake always be kept in excellent working condition?

45. In some cars the speedometer light changes color as you change speed. What does this mean? (See Section XII.)
46. Describe a symptom, or the result, of continued usage for each of the following tire conditions: (a) over-inflation, (b) under-inflation, (c) too much camber, (d) wheels out of alignment, (e) tires being driven with very low pressure, (f) hitting curb when parking, (g) hitting a rock or sharp object on the road.
47. When should chains be used? What characteristics should good chains have?
48. Mention some ways you could get out of a mud hole if only one wheel turns or does not get traction. What should you carry in the car for such emergencies?
49. What are some of the dangers with a bumper jack? What should one carry along with a bumper jack if he can find no other type of jack?
50. Review several principles to be observed for gasoline economy.
51. Give six basic rules for getting the most mileage from your tires.
52. Are all speedometers accurate? Why should you know how your speedometer registers?
53. List some precautions you should take when having your tires serviced.
54. When having your car lubricated.
55. When draining your car on a cold night.
56. When buying a new car.
57. When driving a strange car.
58. When driving on a strange road.
59. When children are in the car.
60. When overtaking a drunken driver.
61. When leaving your car on a hill.
62. When driving through water and rain.
63. When parking in a city.
64. When buying a used car.
65. When stopping to change a tire on the highway.
66. How can you tell if your lights are depressed? Are all cars the same?
67. Under what conditions may a school permit to drive be used?

G. Exercises in the car.

There are two main objectives of this Unit and the instructor will see that both are properly carried out. If extra time is needed the matter should be taken up early enough with the supervisor to make adequate arrangements. These two objectives are:

1. To prepare the learner for actual manipulation in traffic and to make him aware of the many responsibilities a driver must assume when getting behind the wheel of his own car. (See questions under F. These should be thoroughly studied by each examinee before he attempts to drive on the highway.)

2. To give him actual traffic experience and identify his shortcomings so that he may get them cleared up before taking the driver's license examination. If he has been carefully taken through all the exercises in Section IX given at the beginning of this Manual, little difficulty should be experienced.
- H. Class work. Discuss the meaning of compensation and how it may be applied in several phases of driving. Point out specific ways the backward members of the section may compensate to keep out of trouble.

Student's Report for Unit Ten

Name _____ Date _____ Hour of Class _____

Section _____ Day _____

A. Write answers to the following questions taken from those in the assignment. (See F. above)

2. _____
3. _____
5. _____
6. _____
10. _____
17. _____
20. _____
23. _____
26. _____
39. _____
49. _____

B. Draw a sketch showing three lanes of traffic. Your car is in the center lane. Which car would you watch? Your car is A. Mark X all those you would need to observe carefully. (All three lanes have traffic moving the same direction.)

C. Procedures. Describe the steps and precautions to be taken when changing a tire.

D. Give in a few words your reaction to traffic driving as you have experienced it.

How many miles have you driven cars other than the training car?

Graded by _____

Grade assigned _____

XII. NEWER AND UNUSUAL CONTROL DEVICES ON AUTOMOBILES AND MOTORIZED EQUIPMENT

During the past few years a number of newer control devices have been used on automobiles. Some of these have proved satisfactory and are still being used in one form or another. Every student of driving should understand the principles underlying those devices which he may have occasion to use. There are a number of things to be noted about each regarding its use in controlling the car; and having it adjusted, replaced or serviced. A very short explanation of some of the more common of these will be described and mention will be made of certain modification in maneuvering of the automobile so equipped. The specific makes of cars using such devices are only cited as instances. Many other makes may have used the same device at one time or another and a driver should consult his local service garage for details as to any particular make and model of car. The following mechanisms need to be understood by the present-day driver.

A. Gears and Gearshifts.

1. Booster vacuum shift. In some models of Chevrolet the booster shift is used. This is a vacuum shift which does most of the work, the gear lever acting only as an initiator of the shift. The only difference between this and the conventional shift is that the gears can hardly be shifted except when the motor is running.
2. Electric gearshift. Certain models of Hudson and Ford have used this type of shift. It is the bomb-shaped device on the steering wheel with a little finger-tip switch of the letter "H" design conventionally used in shifting. The shift lever acts merely as a selector and the shifting is accomplished by a vacuum mechanism. The motor must be running to accomplish a shift.
3. Automatic clutch. Plymouth came out early with an automatic clutch. This was merely a vacuum-operated mechanism which did the shifting for the driver.
4. The automatic transmission. Oldsmobile introduced an automatic shift which operates entirely automatically and is controlled by the speed of the car. It was only necessary to get into low when starting and the shifting took care of itself as needed.
5. Hydromatic drive. This is a patent name used by Oldsmobile and General Motors for an improved transmission which is rapidly gaining popularity on cars, buses, and other vehicles. It works on the principle of a steam turbine or windmill with an oil liquid used as a medium. The motor furnishes the movement of a liquid which is picked up by a second bladed wheel as the liquid is non-compressible. Coupled with an automatic clutch, this allows a very much simplified set of controls. There is no need for a clutch pedal. A small lever on the steering wheel is set for Neutral, Drive, Low and Reverse, running in a straight line, from left to right. Drive has four speeds which are automatically controlled. Low has four speeds which are automatically controlled. To start out you set the lever at Drive or Low and step on the accelerator. All shifting is done automatically. If you come to a hill, you release the accelerator for an instant and move to Low. Also in going down a very long hill, you move the lever to Low. This holds the car back as shifting into the intermediate or low holds back a car with conventional shift. In Drive positions it acts similarly to free-wheeling. (See number 7 in this section).

When parking on a grade, either facing up or down, you shift to Reverse. This locks the car in place, and it will move neither forward or backward. Buick is reported to be coming out with a modification of this principle in which the lever is entirely omitted.

6. Fluid-drive. This is another type of fluid transmission used by Chrysler. It differs somewhat from the hydromatic, one feature being that the car has a clutch. The conventional type of steering-wheel shift is used as shifting lever, but it has only

four positions which are conventional. The difference lies in the fact that each of the low and second positions has a different gear ratio and one must shift the lever according to the gear desired. Within each of the two, Low and High ranges, the two gears are automatically selected.

On mountains or in traffic one usually drives in Low range. It is possible and generally recommended that one should not change ranges or depress the clutch at a stop sign. By letting up on the accelerator the power is diminished and the motor may be slowed down so it will merely hold the car stationary as a brake; i.e., just enough pull to keep it from rolling back. It is not necessary to depress the clutch except when changing ranges.

When parking a fluid-drive on a hill, it is quite necessary to have the hand brake in first-class condition as the gears of the present models do not hold it in position. The latter two devices are quite well established and if gasoline driven automobiles, using the reciprocation principle, continue to prevail, some form of liquid transmission will undoubtedly become universally used. Dodge uses a slightly different system but employs the fluid transmission as a connecting link.

7. Free-wheeling. This principle was first popularized by Hupmobile. It is merely the bicycle coaster brake principle applied to the driving mechanism of an automobile. When the car moves faster than the motor it is free from it. The motor pulls only when it moves faster than the drive shaft in high gear. Usually, a special lever or cable control makes the device optional at the user's discretion. It never became popular when used by itself, but many of the overdrives used on cars today have this feature connected with the overdrive.

Only one or two makes of car use a two-way control or positive connection when in overdrive. This is important to know since most cars with an overdrive will not be held on a hill by the motor when in overdrive especially when headed down hill. It is necessary to move the control lever or cable into conventional before putting the car in reverse gear and setting the hand brake.

8. Over-drive. This is merely a step-up gear mechanism which operates in high gear. Usually it reduces the speed of the motor about one-third at speeds above 35-40 miles an hour when it goes into effect by the driver releasing the accelerator momentarily. When reducing speed, it becomes ineffective and automatically goes back to conventional at speeds below 35-40 miles per hour. Most cars with overdrive features have a special automatic release for passing. When in overdrive one presses the accelerator firmly to the floor and an electric control changes the gear back to conventional, thus increasing the pick-up of the car for ease in passing.

Most cars have a cable or rod-control knob in the center or left below the dash or instrument panel. To go to overdrive, you slow down usually to about 5-10 miles an hour, depress the clutch and push knob all the way in. This is important. If you stop at a half way position, it may ruin your overdrive. The length of movement necessary to go into overdrive is usually 3-4 inches. The overdrive will save a great deal of gas and oil under certain conditions of driving but, because of the free-wheeling feature, it may also cause greater use and consequently greater wear of the brakes. One may go into overdrive at higher speeds but it is usually safer to slow down as described.

9. Electric gear transmission. A few experimental cars have had electric transmissions, but experiments at Iowa State College and by the motor vehicle manufacturers have not proved them satisfactory. It may be that light weight Diesel engines made to fit passenger cars, eventually may necessitate some form of change in electrical transmission which has been used, in effect, on streamline trains and trucks.

B. Brakes and holding devices.

Automotive engineers have spent a great deal of time perfecting brakes and yet they still remain a long way from being ideal. As a driver, you will need to learn all

you can about the brakes of your car and how they operate. The ideal brake is one that works equally effectively at the beginning and end of your stopping space. Brake linings may soften, due to the heat of friction, and become less effective as you approach a stop. Again, they may be working efficiently when starting on a trip but become inefficient at the end. The self-energizing principle was used by many makers of automobiles at one time but has been found to be dangerous, particularly on slippery pavement. If your car is seven or eight years old, it may have this type of brake and you will need to be very cautious when braking to keep from going into a skid.

1. Mechanical brakes. A few years ago practically all brakes were mechanical. They were operated from the pedal by rods or cables. In the winter these rods or cables would sometimes freeze. The brakes would thus freeze on or off. Improved design has largely eliminated this trouble. If your car has mechanical brakes, you will need to have them oiled and otherwise serviced at regular intervals to avoid trouble.
2. Vacuum brakes are used on trailers but have been found too slow for regular use on cars.
3. Air brakes are used on trains and commercial trucks and vehicles, but are generally too violent in their present state of development for passenger cars. According to Prof. R. A. Moyer, University of California, the ideal brake would never actually allow the wheel to come to a stop or slide. It should automatically release at the point where it will start to slide, as a complete stopping of the wheel causes the vehicle to skid otherwise. Until further developments are made, you will not find air brakes as regular equipment on cars. A few specially built cars have used them with some degree of success.
4. Electric brakes. Some trailer manufacturers use electric brakes but they are troublesome in coastal areas where salt water may corrode the connections. Commercial companies have not used them on passenger cars except possibly for experimental purposes.
5. Hydraulic brakes. So far the hydraulic brake has been almost universally adopted in passenger car construction. It seems to be as trouble-free as any brake so far developed although there are a number of precautions to be taken by one driving a car so equipped. Here are a few:
 - a. Learn how to use them. A violent pressure on the pedal has a temporary locking effect which may cause a car to skid. This experience is often noted when one changes from older mechanical brake models which require greater pedal pressure to stop.
 - b. Keep enough fluid in the system to make your pedal effective in the "outer" position. If you need to push your pedal completely down before it takes hold, there is something wrong. It may be that you need a refill of brake fluid, your master cylinder is bad, or your system is leaking at some point. Have it checked at once. It is dangerous to drive a car in this condition.
 - c. Air in the line may be due to a leak or because of heat built up on a long hill. The fluid vaporizes and you may have to "pump" your pedal more than once to cause it to take hold at all. In such cases it may be all right when it cools down or it may have to be "bled".
6. Hand brakes are legally required to be mechanical in most states and separate from the foot-brake. They are one of the weakest features of modern automobiles and must be carefully nursed along until manufacturers see fit to improve them. The cables either stretch or break, the ratchet doesn't work, there is not enough leverage, one can't tell when they are released, or can't reach under far enough to release them. Some models of Buick can't be shifted into gear until the hand-brake is completely off. This is an excellent feature and should be universally adopted by manufacturers. Always keep your hand-brake so it will hold your car when on a hill. It may help you stop if your other brakes fail, but it is in no sense an "emergency brake" as formerly called.

7. Electric retarders have been perfected which keep cars or trucks at a uniform speed all the way down a steep hill. The friction is dissipated as heat resulting from high amperage generators. They are still in the experimental stage but show much promise.
8. The hill-holder. A patent feature of Studebaker is the hill-holder. It is a simple device so constructed as to hold the foot-brake on by pressure on the clutch if the brake is applied firmly before the clutch is pressed forward. In other words, if your car has this type of brake and stalls on a hill, proceed as follows: Put on your foot brakes firmly. Now push your clutch down immediately and by exerting pressure it will hold the car while you put your foot back to the accelerator to start forward again. When the motor is accelerated to a sufficient point, let clutch out and move on up the hill. It is a fine feature but one must be careful when being towed with the motor in gear as the clutch may be holding the brakes on.

C. Lights.

Most cars since 1941 use Seal-beam light units. This is a combination reflector and bulb unit which plugs into the headlight socket like a 3-prong lamp cord. A metal rim is usually employed to hold it in place and by taking out three or four screws, it may easily be removed. There were originally two forms built: (a) those made with a metal back or reflector with a rigid pre-focus bulb, and (b) those made entirely of glass and glass filled.

The advantages greatly outweigh the disadvantages of these lamps over the old style type. Theoretically pre-focused and constant, they may get out of focus due to sagging of filaments. The glass back retains its characteristics better and lasts longer while the metal back with built-in bulb will still serve if the lens is broken. The all-glass design is completely and instantaneously ruined if cracked and the gas escapes.

Care must be taken to have Seal-beams properly directed. They cannot be focused. If out of focus, it is necessary to buy a new one.

D. Signalling devices.

For the most part such devices are limited to efforts of a few makers, like Buick to furnish as standard equipment some form of indicator lights on the back of the car. This feature is due for a high degree of development and some standardization within the next few years, as drivers apparently will not consistently roll down a window and give the proper hand signal in bad weather.

Several patent devices are on the market as auxiliary equipment, but no standard design has prevailed. Some have flashing red lights, some have flashing orange lights, some have enclosed arrows and similar devices. They are to be highly recommended when they work, and if understood by motorists. One driver, returning to an eastern state from a prolonged stay abroad complimented drivers he passed on their courtesy for indicating by pointer that he was to pass. Actually, they were signalling for a left turn and he was saved from a crack-up largely by carefulness and caution of the drivers he passed at such points. In some states commercial vehicles are required to be equipped with such lights while in others they are not recognized on passenger cars.

The controls on signalling devices vary. On some types they push the lever and bring it back to the original position manually after turning. On others you need only touch the control momentarily and it returns the normal position automatically as soon as released. On some others the lever is moved to the indicating position and the steering wheel returns it when you straighten the wheel after a turn.

The main things you should ask yourself or consider are: (a) Does the car I am driving have such a device? (b) How does it work? (c) Is it legally accepted in my state?

E. Air conditioners.

The old-fashioned heater is largely obsolete and the air conditioner is in common usage. It draws the air in from outside the car and warms it to the desired temperature. Some manufacturers equip the unit with a thermostatic control which is very desirable. The effectiveness of these devices as cooling units in summer is questionable. An air conditioner with dry ice container has been used on the side of the car which fits above the door glass. It may cool the car some but would be a disadvantage by restricting the vision of the driver, especially if used in a coupe or two-door coach.

Air conditioners usually have defrosting attachments if located on the dash and the circulating fan may be run at different speeds. The latter features are better sales points than they are practical from the standpoint of increased utility or comfort. Any car which is fitted with an air conditioner, drawing air from outside, will help a great deal in keeping the frost off windows by increasing the circulation in winter. Opening a wing-window slightly on each side will produce the same effect with somewhat less comfort.

Owners of devices for cooling the car by dry ice or water are not enthusiastic about them. It is better to take deserts by night.

F. Individual wheel suspension.

The riding qualities are being improved a great deal by knee-action and individual wheel suspension. Some of the older models were troublesome, having a tendency to lay over on the side at corners unless equipped with stabilizers, and amateur drivers should note this tendency, as it is quite disconcerting the first time it happens. Some cars have all four wheels operate on this principle.

G. Steering mechanisms.

A great deal of improvement and standardization has been made in this respect. Older cars differed a great deal in the amount of turning necessary to round a corner. When changing cars, note this difference. Some have reversible steering. Others do not. Reversible steering is a feature of construction which causes a car to tend to straighten after turning a corner. Don't depend on it. Do your own turning in any case and keep both hands on the wheel.

Some cars will tend to wander unless perfectly aligned. Others tend to pull to the low side of the road. Others are hard to turn from a pull to the low side of the road. Others are hard to turn from a straight course. Proper alignment, tire inflation, and regular lubrication will remedy most irregularities of steering. You must learn the characteristics of the car you drive. If a car "shimmys" get it to a garage at once.

Stay away from "spinners". They are not only unnecessary but are dangerous. A "spinner" is a knob attached to the steering wheel to turn it with one hand.

H. Tires.

Tires have been improved a great deal. Puncture-proof tubes are too heavy and are not generally recommended. Double tube or "life guard" construction is very much worthwhile from the standpoint of safety as well as economy in tire costs over a period of years. They save both tubes and casings.

Tires made from synthetic rubber do not give as good traction as natural rubber. More care must be taken on ice, snow, or slippery pavement.

Differences in tread designs are much overplayed. Experimentally there is no great difference in skidding characteristics of tire treads. Chains may be detrimental, especially if cross-chains are too far apart. Whenever driving on slick or slippery

pavement one must be extremely careful. Speeds should be reduced to 30-60 per cent of normal at highest.

I. Throttle and choke.

Most larger cars of later model have no hand or dash throttle or choke control. The automatic choke sometimes gets out of order and after warming up, it may be hard to restart the motor on a cold day. It is best to become familiar with the characteristics of the car and learn how to avoid unnecessary starting under such conditions.

J. Starter.

There are two types of starters in common use although the Bendix is rapidly becoming universal equipment. It is actuated by touching a button which rotates the starting motor, engaging the gears by a spiral screw effect. When the motor starts, it kicks out. Occasionally, a buzzing sound results when the starter button is touched. The same result is obtained if the Bendix spring is broken. In such case you will need to have your car towed to start it. Never push others or allow others to push you. Use a tow chain.

The other type of starter employs the principle of the starter gear's being engaged before the starting motor turns over. A danger from this type of starter is that the gear may be engaged when the motor is running. In this case the gears may be damaged or the starter armature is thrown. Caution in the use of these starters should be exercised at all times.

A final point on starters should be brought out. There are some ten or more different places where the starter may be found. Here are a few: (a) floor button, (b) button on dash, (c) lever on dash, (d) pull-out button on dash, (e) on the key switch (automatic when key is turned), (f) on accelerator which throws out automatically after starting, (g) at floor under clutch which starts car when pushed to the floor, (h) by pulling up the horn button. There are some variations on these eight specific types. Be sure you ask about the starter when you drive a strange car. No one is expected to know all these things.

K. Supplement on Latest Developments. More recently two or three newer devices have come on the market and should be discussed here.

1. Dynaflo. A patented form of fluid drive used by Buick which eliminates the mechanical gearshift mechanism. So far as operation is concerned it is about the same as that used by Oldsmobile, but instead of leaving the car in reverse gear to hold it in position, a fifth point on the gearshift lever indicates standing position.
2. Electro-vacuum clutch. Packard is using a special form of vacuum clutch which functions automatically. The mechanism may be rendered inactive by a special switch and thus standard operation attained.
3. Stationary brake-lock. Dodge and possibly other cars have a special brake-lock mechanism which holds the car in position by compressing the hydraulic fluid. It eliminates danger from runaway cars having fluid-drive.
4. Drivemaster. Hudson uses a form of automatic shift similar to the General Motors and Chrysler line of newer developments which works on the same general principle. It can be set for automatic or manual control of the clutch, the same as Packard.

L. Miscellaneous.

On newer cars door handles have been designed so that they will not catch on your clothing. Locks are placed on both sides for convenience. Many locks are designed so that you can lock yourself in the car, but can't lock yourself out. Ash trays are provided to reduce the fire hazard.

Learn all about these features of your personal car before you start to drive. It will save you much embarrassment and trouble.

M. Tractor and truck operation.

Since some drivers may have the opportunity or need to operate a tractor or truck, a few differences and precautions should be noted. When you get on a tractor, remember:

1. The gears on tractors and trucks vary so much that they are usually marked 1, 2, 3, 4, 5, 6, and R or the total number of gears available. Some shift to a high or low range like army vehicles. Some small trucks have to lock back at right or left into reverse. Some have a special lever to engage front wheel drive. Do not be embarrassed to ask how they work. Learn before you get into motion.
2. Tractors in general must be stopped to change gears.
3. Tricycle tractors upset easily. Watch carefully on hillsides, on corners, and at ditches. Also in driving too fast over a rough field. In driving gear they may upset if one wheel strikes a bump.
4. Tractor brakes normally work separately and help turn the tractor. Most of them have a link to connect them for highway driving. Setting one brake sharply when driving in road gear may upset the tractor if the brakes are not coupled.
5. Some larger tractors use fuel oil but start on gasoline. Be sure you know the correct procedure. Know your tractor before you crank it when a starter is not available.

These few principles will help with smaller trucks and tractors. For large equipment you should have special training before attempting to drive at all and responsible companies see that you serve sufficient apprenticeship before driving.

XIII. APPENDIX

Introduction to the Appendix

The Appendix is of primary interest to the instructor and a word on the use of each item will be given here. Section A contains specific suggestions for handling classes in driver training including certain procedures and patterns which strengthen the program if properly carried out. The local situation may call for variation on these procedures.

Section B deals with tests and other devices for evaluating and recording a student's progress. Certain of them should be used regularly although any school may wish to devise or use its own system of records. These devices will be discussed categorically.

1. The enrollment card. Since classes meet in groups of four, it is advisable in our school to place as much responsibility as possible on the student. This card provides for a type of contract signed by the student. It helps him assume his responsibility.
2. Some record similar to the Laboratory Form with scheduled tests, should be used to evaluate the learner's physical qualifications as a driver. It may be abbreviated to go on the cumulative record card if such are used.
3. The Clinical Record Form is a subjective rating made by the instructor. It may be briefed the same as No. 2 for permanent records.
4. The Visual Examination Form is used for special cases of doubtful vision. It might well be submitted to a vision specialist as a basis for an evaluation of the student who is borderline with respect to legal requirements for driving vision.
5. The Rogers-Lauer Scale should be used to check the progress of the student. It is a fair indication of his skill at the wheel when properly checked. No one should be allowed to take a driver's examination unless he has a score of 25-30 at least. We recommend that it be used two or three times during the course.
6. The Miller-Lauer form was designed for research in evaluating performance. It may be used in occasional cases.
7. This form may be used for a final check of driving performance at the end of the course.
8. For a general check of problem cases the driving field test may be used occasionally.
9. This form is of more theoretical importance but may be used occasionally.
10. The form for checking cars should be required as home-work for every beginning student of driving.
11. These questions may be used for any evaluation purpose, as a test for service clubs, etc. See answers at the end of this section.
12. Is a convenient form for keeping mileage records on drivers. It may be very helpful in making reports to those loaning cars.

Section C contains an adequate but conservative statement of equipment needed for driver training if the work is up to par. It should be studied carefully.

Section D is a list of films and visual training materials available for use with driver training.

Section E gives the general plan of driving course designs and equipment used for driver testing and training at different places. It contains a number of suggestions which have been used successfully by various schools throughout the country. A note is attached to each with acknowledgment of the source.

Section F is included as a guide to the principles of driver testing. It is probably best to use a few simple tests at first and later, if feasible, to go into the more elaborate equipment. In any case, it is the scientific use of these devices which makes them valuable in driver training. In general, it is perhaps best to work out standardizations for the local situation rather than to depend upon national norms.

Section G shows a form of attitude test used for checking attitudes of drivers. This phase of driver training is very important. Only a part of the items are significant, the others being fillers. Three scores, X attitudes towards law, Y attitudes towards people, and Z attitudes towards risk may be calculated by using the respective keys.

Answers to Questions in Test 11, "Are You a Safe Driver?"

| | | | | |
|----------|-----------|-----------|-----------|-----------|
| 1. Wrong | 6. Wrong | 11. Right | 16. Wrong | 21. Right |
| 2. Wrong | 7. Right | 12. Right | 17. Right | 22. Right |
| 3. Right | 8. Right | 13. Right | 18. Right | 23. Right |
| 4. Wrong | 9. Right | 14. Wrong | 19. Right | 24. Right |
| 5. Wrong | 10. Wrong | 15. Right | 20. Right | 25. Wrong |

General Regulations for Students and Instructors

A. In teaching, one of the first principles is the willingness to accept responsibility. In fact, no prospective employer is interested in an unreliable person. Every teacher should be punctual and prompt at every assignment and should be prepared to give something worthwhile each period. An outline of each assignment should be made out by the instructor on the master-assignment sheet which has been given to every trainee. It is the instructor's responsibility to cover these assignments systematically, in class, and to follow the driver-training outline for the roadwork when in the car. Full time should be given students each period and each given a chance at the wheel.

The following should be reported to the supervisor immediately:

1. Repeated absences from class.
2. Cases of deficiency in physical, emotional, or mental make-up of the learner.
3. Any disorder or maladjustment of the training car.
4. Any hazard, disturbing influence or irregularity existing on the training field.
5. Any late entries in the class and the need for special instruction by such persons, or others who are slow to learn.
6. Any personality clashes which may arise between learners.
7. A timid person may sometimes be helped by being shifted to another section.
8. Any cases in which the learner presents a special problem to the instructor.
9. Keep all regular forms in class room or laboratory with records up-to-date at all times.
10. Leave key at designated place at all times. This is necessary to conserve everyone's time. It may save you five minutes not to return the key. It usually re-

sults in wasting 30 minutes or more for the supervisor, the next instructor and four learners.

11. Emergencies. Emergencies will happen. Be prepared to handle them.
 - a. Raining hard. If in the car, continue to practice and trade time with other class if they do not appear at once on account of rain.
 - b. Instructor becomes ill on way to class. Get another authorized instructor to take both groups and handle them. Do not dismiss any class unless all college classes are officially closed.
 - c. Car not on field. It will be there soon or information on its whereabouts will be known at the office.
 - d. Car out of gas, needs water, or tire low. Report to supervisor or assistant in charge at once if you cannot take care of it yourself. Look for reserve supplies. They will be in the trunk of the car.
12. Allow no children to play on the field or ride in the car at any time.
13. Keep all learners in the car during the lesson and practice period. Each can learn from the others if their attention is properly directed. The same is true of the classroom period.
14. Have any student who must miss a lesson trade with someone else, if possible. It is his responsibility to make such arrangements.
15. Refer all points of questionable conduct or procedure immediately to the supervisor.
16. In case there are less than four in a class the following minimum obligation of time is assumed by the college for regular group fees paid:
 - a. Four in class - 15 hours.
 - b. Three in class - 12 hours.
 - c. Two in class - 9 hours.
 - d. One in class - 6 hours.
17. However, unless considered as special groups the full fifteen hours will be given and small sections will be used as special help classes. No class should be shortened in length by instructor unless authorized by supervisor.
18. Regular classes may be given in two forms of schedules:
 - a. Ten periods of each given twice a week. This schedule works best for spring and summer sessions. Any special help and the driver's license is given as extra time over and above the 15 hours in the car.
 - b. Ten periods of each given once a week. This works best in fall and winter and for some sections in spring. Any special help and the license examination is given extra.
19. The period is divided to give 25 per cent of total time in the classroom and 75 per cent behind the wheel.

Ten period classes allow about 20 to 25 minutes in class and at least 80 minutes behind the wheel. Each learner gets $\frac{1}{4}$ of the time behind the wheel. This division of time should be scrupulously followed.

B. Devices used for Keeping Records and Evaluating Driving.

1. Type of Special Enrollment Card.

| DRIVER EDUCATION AND TRAINING FEE CARD. L. 44. | | | | | | | | | | | | |
|---|------|------|--------------------|----------|-----|-----------------------------|------|------|--|-----------|------|--------------|
| Fall | Win. | Spr. | 1st half Summer | 2nd half | 194 | Division | I.S. | Eng. | Ag. | H.Ec. | Vet. | Non Coll. |
| Name _____ | | | | | | Student: Yes _____ No _____ | | | | | | |
| | | Last | | First | | Middle | | | | | | |
| College Address _____ | | | | | | Phone _____ | | | Hrs. carried _____ | | | |
| Home Address _____ | | | | | | | | | | | | |
| Height: ____ft. ____in. Weight ____lbs. Date of Birth: ____ Age: ____ years ____ months. | | | | | | | | | | | | |
| Conditions to be considered before obtaining license: (Aids, training, etc.) | | | | | | | | | | | | |
| Drivers license: Yes _____ No _____ Makes of cars driven: _____ | | | | | | | | | | | | |
| Grade: Classwork _____ | | | | | | Notes and reports _____ | | | Final | | | |
| Training Record by Periods | | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Practical | | |
| | | | | | | | | | | | | |
| Mark each period as follows: P present, or a grade when exam is given: A absent. (Contd. on opposite side) | | | | | | | | | | | | |

Instructor _____ Section _____ Class hours _____

DRIVER EDUCATION AND TRAINING FEE CARD (Continued)

1. Do you agree to be punctual each time? _____
2. Do you agree to attend regularly each period? _____
3. Do you agree to prepare for, and take all examinations? _____
4. Do you agree to prepare faithfully all reading assignments? _____
5. Do you agree to hand in all notes and reading on class assignments? _____
6. Do you agree to do everything necessary to secure the course certificate? _____

I have read the conditions of enrollment and agree to abide by them.

I have read the regulations relating to the course and will do my best to comply.

Signature of learner: _____ Date _____

Name of parent or guardian: (If under 18) _____

Fee paid: \$ _____ Date _____ Received by _____

Suggestions by instructor as to qualifications of learner:

LEARNING TO DRIVE SAFELY

2. Laboratory Record Form

Name _____ Date _____ Number _____

I. Experience with Motor Vehicle. Signature of Examiner_____

1. Driving - Cars Driven _____ Years Driven _____ Total mileage _____
2. Knowledge of motor vehicles _____ Attitude Score _____
3. Total travel in miles - Bus _____ Car _____ Train _____ Airplane _____
4. States you have lived _____
5. Cities you have lived _____
6. Driver's License _____ Chauffeur's License _____

II. Basic Physical Qualifications (Minimum essential tests starred)
Letter Rating A-B-C-D-E.

1. Height _____ Weight _____ Health _____
2. Physical conformation (describe) _____
- *3. Strength - R _____ L _____ Average _____
- *4. Activity - 1 _____ 2 _____ 3 _____ 4 _____ Ave. _____
5. Vision (General rating) _____
- a. Acuity - With glasses - R _____ L _____ B _____
 Without glasses - R _____ L _____ B _____
- b. Astigmatism - R Out _____ In _____ L Out _____ In _____
- c. Lateral phorias - Eso. _____ Exo. _____
- d. Vertical phorias - R. Hyper _____
 L. Hyper _____
- *e. Ocular dominance 1 _____ 2 _____ 3 _____ 4 _____
 5 _____ 6 _____ 7 _____
- *f. Field of vision - R _____ L _____ B _____
- *g. Color vision _____ Number right _____
- *h. Glare tolerance 1 _____ 2 _____ 3 _____ 4 _____ 5 _____
- i. Other conditions _____

[illegible]

III. Mechanical Aptitude.

- *1. O'Connor Block Test 1. Time _____ Blocks _____
 *2. Distance Judgment - Near _____ Middle _____ Far _____
 3. Traffic Maze Test - 1 _ 2 _ 3 _ 4 _ Total _____
 4. Drivometer - Contacts _____ Time _____ Errors _____
 5. Neural Stability - Resistance _____
 Change _____

IV. General Rating on Qualifications as a Driver -

| A | B | C+ | C | C- | D | E |
|---|---|----|---|----|---|---|
|---|---|----|---|----|---|---|

3. Clinical Record Form.

Iowa State College Driving Laboratory. Form 7-44

Number _____ General Rating _____

I. General Information.

1. Name _____ Address _____

2. Reason for learning to drive _____

3. Handedness - R. _____ L. _____ Both _____

4. Evident physical defect. _____

II. Training Record (Quizzes used during course). Mark as A, B, C, D, and E for excellent, good, average, fair, and poor respectively.

1. Test 1 _____ . 2. Test 2 _____ . 3. Test 3 _____

4. Attendance _____

5. Attitude _____

6. Manipulation _____

7. Preparation _____

8. Observation _____

9. Smoothness of operation _____

10. Parking _____

11. Zigzag _____

12. Line driving _____

13. Backing _____

14. Hand signals _____

15. Starting on a hill _____

16. Turning _____

17. Adaptation of speed _____

18. General road driving _____

19. Knowledge of road laws _____

20. Knowledge of motor vehicle _____

Suggestions for improving your driving _____

Signed _____

Examiner and Instructor

4. Visual Examination Record. L-43.

1. Name _____ Address _____

Sex _____ Age _____ Date _____ Wear Glasses? Yes _____ No _____

Grade or Class _____ Scholastic Average _____ Reading Rate _____

2. Ishihara Test: Number: 12 8 6 5 74 2 6 5 7 - - 26 42

Remarks: _____

3. Astigmatic Index (Without Glasses)

| | | | | |
|--------|-----------|----------|------------------|---|
| Right. | Out _____ | In _____ | Difference _____ | Remarks: _____ _____ _____ _____ |
| | Out _____ | In _____ | Difference _____ | |
| Left. | Out _____ | In _____ | Difference _____ | |
| | Out _____ | In _____ | Difference _____ | |

(With glasses)

| | | | | |
|--------|-----------|----------|------------------|-------|
| Right. | Out _____ | In _____ | Difference _____ | _____ |
| | Out _____ | In _____ | Difference _____ | |
| Left. | Out _____ | In _____ | Difference _____ | |
| | Out _____ | In _____ | Difference _____ | |

4. Vision (without glasses)

Vision (with glasses)

| | | | |
|-------|-------|-------|---------|
| Right | _____ | _____ | _____ % |
| Left | _____ | _____ | _____ % |
| Both | _____ | _____ | _____ % |

| | | | |
|-------|-------|-------|---------|
| Right | _____ | _____ | _____ % |
| Left | _____ | _____ | _____ % |
| Both | _____ | _____ | _____ % |

Remarks: _____ Examiner _____

5. Glare Tolerance _____ Mean _____.

6. Night Vision Index _____ Mean _____.

7. Muscular Condition of Eyes:

Exophoria _____ degrees.

Esophoria _____ degrees.

R. Hyperphoria _____ degrees.

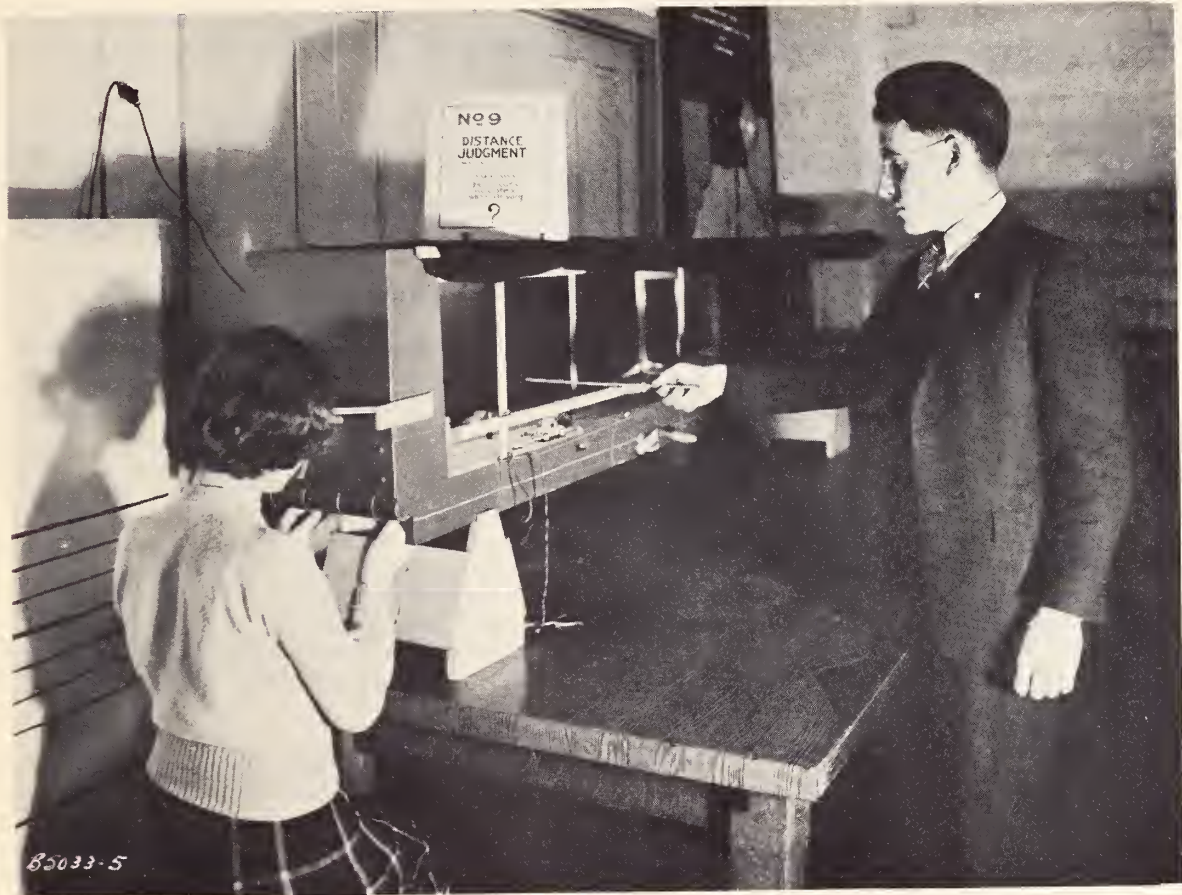
L. Hyperphoria _____ degrees.

Strabismus: In _____ Out _____ Up _____ Down _____.

8. Distance Judgment: _____ Total.

9. Ocular Dominance _____.

10. Field of Vision - R. _____ L. _____ Total.



Distance Judgment

This is more than stereopsis or mere depth perception. The images of the small cars are reflected in a high grade mirror giving the effects of shadows, perspective and other variables affecting this ability.

Younger drivers are usually not skilled in this respect and much emphasis needs to be placed upon development of this ability.

5. Rogers-Lauer Driver Training Inventory or Scale.

ROGERS-LAUER DRIVER-TRAINING INVENTORY

Name of Rater _____

Name _____ Date _____

Sex _____ Age _____ Driving Experience _____ Months _____

Rides: Bicycle _____ Horse _____ Motorcycle _____ How Long _____ Years _____

Directions: Check the driver according to the trait which fits him best. Check one and only one item under each Roman numeral. The points to be assigned are as follows: (Do not consider these values until you have checked driver.) Item 1 is given 5, item 2 is given 4, item 3 is given 3, item 4 is given 2, and item 5 is given 1, except Roman Numeral IV which is weighted 2, 3, 5, 4, and 1 from top to bottom.

I. ATTENTION

1. Good concentration _____
2. Somewhat easily distracted _____
3. Easily distracted _____
4. Somewhat easily confused _____
5. Easily confused _____

II. OBSERVATION AND ALERTNESS

1. Quick, accurate _____
2. Accurate, methodical _____
3. Slow but accurate _____
4. Quick but inaccurate _____
5. Slow, inaccurate _____

III. EMOTIONAL CONTROL

1. Very calm _____
2. Calm _____
3. More or less calm _____
4. Somewhat nervous _____
5. Very timid _____

IV. ATTITUDE

1. Conceited, "show-off" _____
2. Over-confident _____
3. Alert, confident _____
4. Hesitant, somewhat timid _____
5. Very timid _____

V. EFFORT AND WORK ATTITUDE

1. Concentrates on task _____
2. Interested in task _____
3. Indifferent to task _____
4. Seems bored _____
5. Contempt for task, cynical _____

VI. KNOWLEDGE AND UNDERSTANDING

1. Complete, detailed knowledge _____
2. Knows most points _____
3. General-not detailed _____
4. Knows few points _____
5. Complete lack of knowledge _____

VII. MASTERY OF INSTRUCTIONS

1. Comprehends instructions, asks questions _____
2. Listens closely to instructions _____
3. Digresses from instructions _____
4. Instructions need repeating _____
5. Uninterested, does not try _____

VIII. POSITION

1. Easy, relaxed _____
2. Somewhat relaxed _____
3. Slightly tense _____
4. Very nervous _____
5. "Freezes up" _____

IX. MOVEMENTS

1. Quick, confident _____
2. Smooth, consistent _____
3. Slow, correct _____
4. Hesitant, jerky _____
5. Confused, erroneous _____

X. MECHANICAL AND SPACE JUDGMENT

1. At home with machines _____
2. Somewhat mechanically inclined _____
3. Understands general points _____
4. Lacks mechanical ability _____
5. Gross lack of mechanical ingenuity _____

Score - C

6. Miller-Lauer Driving Ability Test.

Student _____ Grade _____ Rater _____

A. Elementary Procedures

- | | | |
|---|-------|--|
| 1. Pre-starting check | _____ | Make certain the student has a good method |
| 2. Starting engine | _____ | of checking the car before trips, uses the |
| 3. Smooth shifting | _____ | six steps for starting and that he checks |
| 4. Observation of signs and traffic when moving | _____ | his instruments after starting. He should |
| 5. Observation at RR | _____ | refrain from racing the engine, and be |

B. Maneuvering in Traffic

- | | | |
|------------------------------|-------|---|
| 1. Steering | _____ | Make certain the student |
| 2. Left turn in clover-leaf | _____ | knows which lanes to use, and gives the |
| 3. Right turn in clover-leaf | _____ | proper hand signals for various maneuvers. |
| 4. Hand signals | _____ | He should handle the car with definite |
| 5. Traffic light | _____ | assurance, and should allow plenty of margin for safety. |
| 6. Use of horn | _____ | |
| 7. Turns in traffic circle | _____ | Stress saving fenders in this section of |
| 8. Precise turning | _____ | the test, and put the student in positions |
| 9. Smooth acceleration | _____ | which will require him to use judgment |
| 10. Smooth stopping | _____ | enough to make a second try at something rather than hit a stanchion. |

C. Automobile Manipulation

- | | | |
|----------------------------|-------|---|
| 1. Angle parking technique | _____ | |
| 2. Parallel parking | _____ | Fill this section out carefully, because |
| 3. Zigzag forward | _____ | these are the points that differentiate |
| 4. Zigzag backward | _____ | between a skillful car handler and a safe |
| 5. Backing on a line | _____ | driver. A good driver is not afraid of |
- his car, takes no chances, relaxes in his seat but keeps his full attention on traffic. He does his utmost to obey the rules of the road and to be sportsmanlike to other drivers.

D. Mental Manipulation

- | | |
|---|-------|
| 1. Driving judgment | _____ |
| 2. Self-assurance | _____ |
| 3. Relaxation while driving | _____ |
| 4. Full attention to driving | _____ |
| 5. Attitude towards the rules of the road | _____ |

GRADING: Superior (A) - 4 points
 Very good (B) - 3 "
 Average (C) - 2 "
 Fair (D) - 1 "
 Poor (E) - 0 "

The test will start from the garage on the driving field, and will work north and west to the 135 degree turn at the extreme NW corner of the field. At this point all of the elementary procedures will have been accomplished, and the car will be driven south to the first intersection where it will be ready to accomplish the clover-leaf from the west. The left turn in the clover-leaf will bring you out on the NW avenue from where two succeeding right turns will bring you back into the clover-leaf from the east. The right turn in the clover-leaf will bring you back to NW avenue to the third intersection for another left turn which will take you through a traffic light. At this intersection make a left turn and 200 feet north make another left turn to enter the traffic circle from the east. Leave the traffic circle to the south on the horse shoe drive; now proceed to the cinder parking lot via the southern tip of the course where the other tests will be completed.

7. Driving Field Test.

Name _____ (1940 Revision) _____ Rater.

Supplementary to AAA Field

H. A. White and A. R. Lauer

(Instructor ratings: 0 for failure, 1 for fair, 2 for good, 3 for excellent)

I. Beginning to Park.

- a. Starting engine _____. b. Smoothness _____. c. Gear shifts _____.
 d. Looks for traffic at intersection _____. e. Hand signals _____.
 f. Observes R.R. _____.

Total Score _____

II. Parking (Parallel)

- a. Hand signal for stop _____.
 b. Can park properly and easily _____.
 c. Parks in less than two minutes _____.
 d. Looks for traffic when pulling out _____.

Total Score _____

III. To Angle Parking and Allied Maneuvers.

- a. Signals - for turns _____
 b. Drives in for oil (executes smooth stop and backing _____)
 c. Angle parking - observes parking regulations _____.

Total Score _____

IV. Southwest Corner to End.

- a. Precision in backing _____.
 b. Observes signs _____.
 c. Sounds horn _____.
 d. Stop-sign _____.
 e. Attitude (towards procedures in general) _____.

(A B C D E)

- f. Time for trip (Multiply by 6) Minutes _____ Seconds _____

Total Score _____

Total number of points
possible _____

Score _____

Name _____ Score - Points_____

- Points _____ Summary _____

Points on Letter

3. General Points in Manipulation.

8. Comments of the Examiner: _____

Examiner _____

The blueprints for stanchions used in the practical tests may be obtained from the American Automobile Association at 17th and Pennsylvania Avenues, Washington, D. C. Letter ratings for time if established by empirical methods. When 100-200 of a class of drivers are to be examined, using vehicles which they are most likely to drive are available, make distributions and assign letter ratings as follows:

- A = Upper 5 per cent - shortest time.
- B = Next longer 10 per cent.
- C+ = Next longer 20 per cent.
- C = Middle 30 per cent - average time.
- C- = Next longer 20 per cent.
- D = Next longer 10 per cent.
- E = Longest 5 per cent - longest time.

Standardization of the glarometer may be made the same way by giving the test to an unselected group of 100-200 persons. The A group would be the 5 per cent having the highest indicator readings, those showing the greatest tolerance of light.

9. A Form for Field Tests of Drivers.

1. Number _____ Man _____ Woman _____ Date _____
2. Name _____ Age _____ Wt. _____ Ht. _____
3. Years of driving passenger cars _____ Commercial cars, trucks _____
4. Number of kinds of cars you have driven _____ Car used in test: _____
Model _____ Year _____ Make _____
5. Number of accident experiences while you were driving, (accident defined as need for garage repairs of car or medical attention to driver, passenger, or other persons) _____. Describe each. _____

Legend:

x - Lines of contact.
 O - Missed signal.
 B - Backed unnecessarily.
 S - Failed to stop.
 D - Directions necessary.
 M - Excess movement.
 L - Right signal.
 R - Left signal.
 K - Killed engine.
 C - Corners cut.
 W - Wide turn.
 J - Jerks when starting.

Scheme of Field

(May use any of the
 fields shown on
 pages 128 and 133)

Parking time _____ Sec.
 Stopping distance _____ Ft. Speed _____ miles per hour.
 Time of trip in min. _____ Sec. _____ Error score _____ Aver. T _____
 Errors _____

To improve your driving, save your car, and for greater safety you should:

- | | |
|---|---|
| ____ 1. Take corners slowly. | ____ 10. Look both ways at a railroad intersection. |
| ____ 2. Keep attention on your driving. | ____ 11. Practice backing. |
| ____ 3. Try to be calm and at ease. | ____ 12. Learn state traffic laws. |
| ____ 4. Start and stop gradually. | ____ 13. Give standard hand signals for turning <u>at all times</u> . |
| ____ 5. Use horn and rear view mirror. | ____ 14. Keep brakes and lights adjusted properly. |
| ____ 6. Observe signs more carefully. | |
| ____ 7. Look out for stop light. | |
| ____ 8. Shorter turns at corners. | |
| ____ 9. Do not "cut" corners. | |

10. Form for Checking Cars.

Learner _____ Grade _____

(To be filled out in manual for grade)

Check any car available to you as you find it for the following:

Car license No. _____ Year and Make _____
 Tires (Five) _____ Pressure at Present _____ Size _____
 Serial Number _____ RR _____ LR _____ RF _____ LF _____

Gas:

Capacity of tank _____ Quantity in tank now _____
 Accuracy of gauge _____ Type of gauge _____
 Mileage car makes on a gallon of gasoline _____
 Scale values on oil gauge _____
 Distance you could travel without refill _____
 Suggestions on saving gas _____

Oil:

Capacity of crank case _____ Pressure _____
 Gauge registers when cold _____ When warm _____
 Scale values on oil gauge _____ to _____
 Amount of oil in crank case at present _____
 Distance car would go without refill _____
 Weight of oil used _____
 Suggestions for lengthening life of car by better lubrication _____

Electrical system:

Age of battery _____

Specific gravity of battery _____
 Voltage of battery _____ Amount of water in battery _____
 What happens when specific gravity is low? _____
 What happens when the voltage is low? _____
 Suggestions on how to save the battery _____
 What might be wrong with a starter when it buzzes when the starter button is pushed? _____
 _____ How can it be fixed? _____
 Why will lights go out or dim when starter is depressed? _____
 Describe and draw sketch of two types of starters. _____

1. _____

2. _____

Radiator:

Capacity of radiator: _____

How much alcohol will be necessary to keep it from freezing at -25°? _____
 How much Prestone? _____
 Condition of hoses _____ Condition of fan belt _____
 Evidence of leaks anywhere _____
 Color of radiator contents _____ Explain color _____
 Does radiator need flushing out? _____
 General condition of car such as lubrication, finish, mechanical condition, upholstery, etc.

11. Questions on pamphlet "Are You a Safe Driver?" by D. C. Duncan and A. R. Lauer,
Form B.

Place Right or Wrong on line after each question.

1. Highway accidents are mostly unavoidable. _____
2. Over 50% of drivers are accident-prone. _____
3. Experience with different cars improves driving safety. _____
4. All persons are alike in psychological traits such as seeing, hearing, etc. _____
5. One who does not get along with others is likely to be very safe driver. _____
6. Being able to manipulate gears, steering, and other controls of the car will insure safe driving. _____
7. Most drivers would be safe if they knew how to be. _____
8. Domestic troubles may cause one to become accident-prone. _____
9. It is possible to measure how excitable one is. _____
10. Glare of headlights affects all persons alike. _____
11. One who is slow to react is more likely to get caught in an emergency. _____
12. Fast driving increases the danger of damage in case of an accident. _____
13. Tight shoes may cause an accident. _____
14. Every man is as good a driver as he thinks he is. _____
15. Poor distance judgment may cause trouble in passing other cars. _____
16. One can usually see far enough at the side at an intersection to avoid collision without turning his head. _____
17. Stopping for boulevard signs is always necessary even in light traffic. _____
18. A sleepy driver is much more likely to have accidents. _____
19. Some persons eyes do not track together. If off over 5° - 8° they may see double images when fatigued. _____
20. A wise man uses the knowledge he has of himself for self-improvement. _____
21. It is much safer to drive on some road surfaces than others when both are wet. _____
22. Good drivers on the road increase the good will of the public and eventually mean better salaries for employees. _____
23. Extremely slow driving creates a hazard on the roadway. _____
24. In the U. S., a man accused of drunken driving may be put in jail. _____
25. Accident-prone drivers can easily remedy their troubles. _____

(See answers on page 109)

LEARNING TO DRIVE SAFELY

12. Suggested form for use in car to keep a record of mileage.

DUAL-CONTROL TRAINING CAR RECORD SHEET

(To be filled in at each instruction period by instructor)

[illegible]

C. Equipment list for driver training.

1. Twenty stanchions five feet high with 2 x 4 base - 30 inches each way.
2. Three creosoted 4 x 4's for curb; 8 feet, 9 feet, and 14 feet, respectively.
3. 50-100 old junk tires for layout out on the field.
4. One tennis marker.
5. 100 lbs. dehydrated lime.
6. 5-gal. auxiliary water can (leak-proof) for car trunk.
7. 5-gal. auxiliary gas can (leak-proof) for car trunk.
8. 2-gal. auxiliary oil can (leak-proof) for trunk.
9. 1 6-ampere battery charger.
10. 1 declerometer or set of tumbling cylinders.
11. 1 milk bottle.

D. Slides and films for use in driver-training. (Courtesy Don Conover)

Keeping Your Car Fit.

12 minutes OE 488 1943 16mm sound.
 Care of tires, battery, radiator, etc. Designed particularly for beginning students.

Know Your Car.

(WS-2143)

15 minutes OE486 1943 16mm sound.
 How the modern motor vehicle operates. Designed particularly for beginning students.

Power.

10 minutes Jam Handy 1943 16mm sound.
 Through animated illustrations this picture shows how the four-stroke cycle internal combustion engine works.

Short Stops.

8 minutes Jam Handy 1943 16mm sound.
 The effect of speed and road surface on stopping distance is shown and expert drivers explain how to use the brakes most effectively for safe and smooth stops.

Steering, Wheels, Front, and Rear Axles.

19 minutes OE484 1945 16mm sound.
 Checking the wheels for balance, play in the steering wheel, and general check of running gear.

The Battery, Ignition and Electrical System.

26 minutes OE462 1945 16mm sound.
 Thorough check of electrical system. Good illustration of methods.

The Clutch and Hand Brake.

12 minutes OE482 1945 16mm sound.
 Shows how to determine the amount of clutch pedal clearance, how to inspect and adjust the hand brake.

The Cooling System and the Fuel System.

22 minutes OE 464 1945 16mm sound.
 Checking the cooling and the fuel system.

The Periodic Check-up.

12 minutes OE489 1945 16mm sound.
 The necessary steps in the periodic check-up of a car.

Trouble Shooting Your Car.

12 minutes OE490 1945 16mm sound.
 What the driver should do to locate and correct minor car troubles.

Elementary Driving Instructions and Inspections.

25 minutes OE U. S. Army (NYSWG) 1946 16mm sound.
 Elementary step-by-step instructions to a new operator of a heavy vehicle.

Learning to Drive.

30 minutes NYUCSE 1941 Sound Slidefilm 35mm
 Prepared primarily for high school students in driver training course. Part I deals with car, etc. Part II shows a beginner at the wheel.

Learning About Turning.

6 minutes OSU 1941 16mm color silent
 The correct way to turn around. Valuable for class discussion.

Soft Pedal.

8-1/2 minutes Jam Handy 1943 16mm sound.
 Shows construction and operation of the clutch. Animated illustration included.

Smooth Starts.

11 minutes Jam Handy 1943 16mm sound.
 How inertia is overcome in starting automobile by use of clutch.

The Operator and His Job.

12 minutes OE491 1945 16mm sound.
 Safety and comfort of passengers, maintenance, people on streets.

Tomorrow's Drivers.

10 minutes NYU 1941 16mm sound.
 Presents the experiences of novice drivers enrolled in a high school driver education and training course.

Your Driving Habits.

15 minutes OE487 (NS-2130) 1945 16mm sound
 Shows the elements of good driving.

Safe Driving and Safe Seeing.

25 minutes NWU Recent 35mm sound, slidefilm
 Presentation of the advantages of good highway lighting. Causes and prevention of night accidents are included.

Safe Roads.

10 minutes MU (GMC) 1942 16mm sound.
 Care, caution, and attention to signals while driving mean accident-free enjoyment for motorists everywhere.

The Road of Tomorrow.

20 minutes Jam Handy 1943 16mm sound.
 An interesting presentation of safety in construction of the superhighway in Pennsylvania. Demonstrates divided highways, clover-leaf intersections, etc. Examples of how engineering has made highways safe.

Drunk Drivers. (NS-2159)

22 minutes TFC 1940 16mm sound.
 If you drink don't drive--If you drive don't drink! The story of what happens to the driver who takes a few drinks.

For Safety's Sake.

30 minutes N.J. Hy. Dept. Recent 16mm sound.
 Scientific design of highways is helping to solve the problem of motorists.

Teach Them to Drive.

20 minutes Am. Legion (NSC) NS-1930 1945 16mm sound.
 Shows driver training methods now in use in high schools, and the daily dividend in safety that such training can achieve.

The Chance to Lose. (JS-843)
10 minutes (NS) 1937 16mm sound.
Received award as best safety film for 1937. Illustrates the chances taken by many drivers as compared with the chances taken in various forms of gambling.

Youth Takes to the Highway.
15 minutes Del. SC Recent 16mm silent (Color)
Training high school pupils to drive. Demonstrates safe driving techniques.

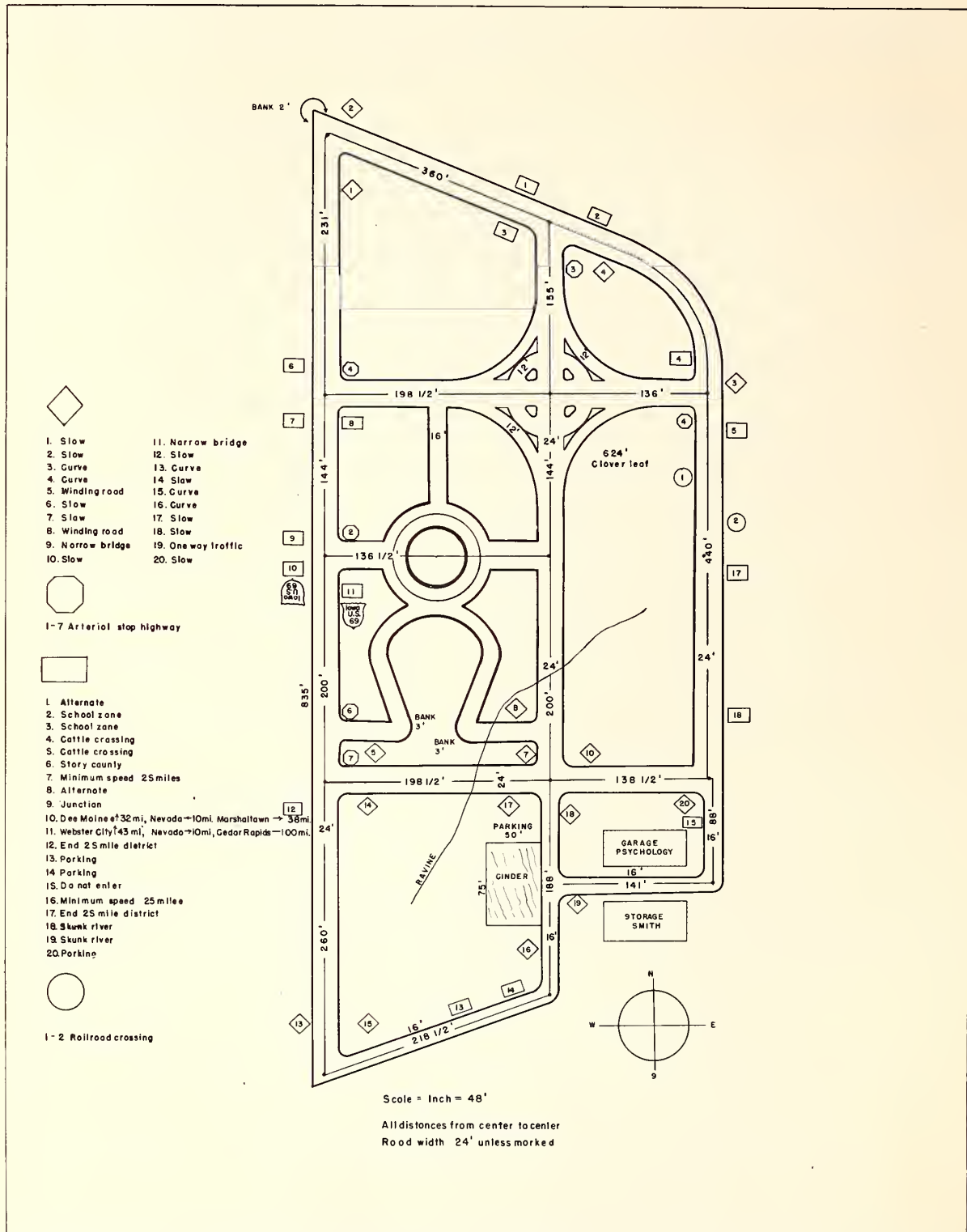
No Use Skidding.
20 minutes NSC 1941 35mm sound slidefilm
A fast-moving film explaining the major causes of winter traffic accidents.

Turnabout Man.
8 minutes Jam Handy 1943 16mm sound.
Shows why bad manners in driving are not only just as out-of-place as in society, but are much more dangerous.

1. Set of slides on Highway Safety by Keystone View Company.
2. 16-mm films to be used as available in teaching driving.

(The numbers refer to Iowa State College film library. NSC = National Safety Council, MU = University of Missouri, NWU = Northwestern University, etc.)

E. Driving Fields and Training Devices.

1. Driver Training Field at Iowa State College

Driving Field

2. Driver Training Field, Iowa State Teachers' College, Cedar Falls, Iowa.



Driving Field - I.S.T. C.

3. Driver Training Field, Lane Technical High School, Chicago, Illinois.



4. Stoner Traffic Board Layout.



A number of problems can be set up for group solution with this board. Safe driving involves the ability to visualize situations in advance.

Parking instruction behind the wheel can be greatly speeded up by using some form of traffic board, good blackboard illustrations, or by motion pictures. It goes without saying that a skilled demonstration by the instructor should be given at the first presentation of the problems set for practice in the car.

Such a board may also be profitably used for testing the student on traffic laws prior to his application for a driver's examination.

5. Stoner Traffic Test Record

(To be used with traffic board. See page 130)

How Well Do You Know Traffic Ordinances and Practices?
A Traffic Problem Test

by

C. M. Stoner and A. R. Lauer

Name _____ Age _____

Years of Driving _____ Car driven _____

Miles traveled Annually _____ Total Score on Test _____

Motor Vehicle Code Score _____ Traffic Usage Score _____

On the Problem Board you will find typical markers, situations, violations, good practices and dangerous practices commonly noted on the streets and highways. Your attention is called to the numbered black disks. Each disk is within two or three inches of some situation you are to react to. The number on the disk corresponds to the number on the check sheet--1, 2, 3, 4, 5, 6, etc. First you are to check the proper columns marked Violation, Dangerous Practice, Wrong Situation, Nothing Wrong, etc. Under the column What is Wrong? State in a word or two the exact nature of the difficulty. Use check marks () for columns A, B, C, and D. In E note what is wrong.

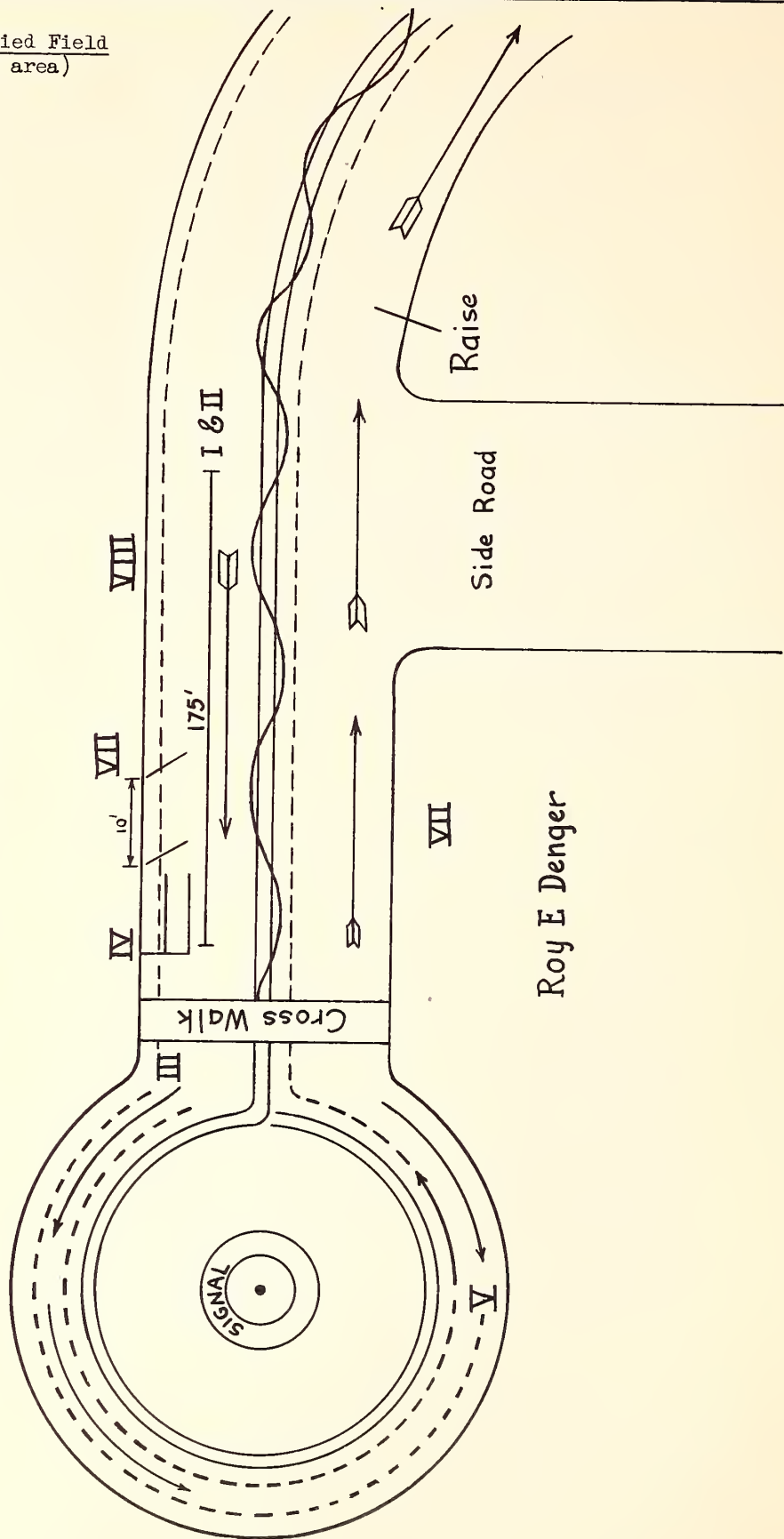
Remember to check only one column after each item or disk number. Some of the situations are quite correct. Mark these as Nothing Wrong. In a few instances there are two incorrect practices or violations on the same vehicle. Note the placing of signs, direction vehicles are headed, types of signs, etc. (Set up problems as desired)

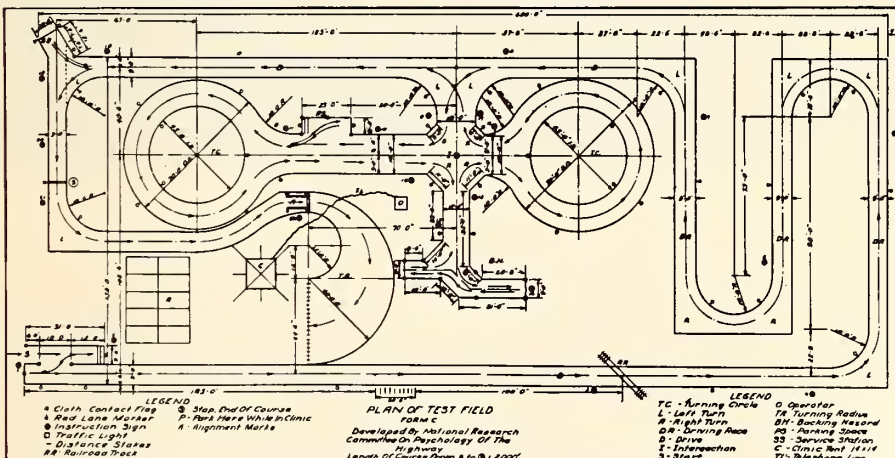
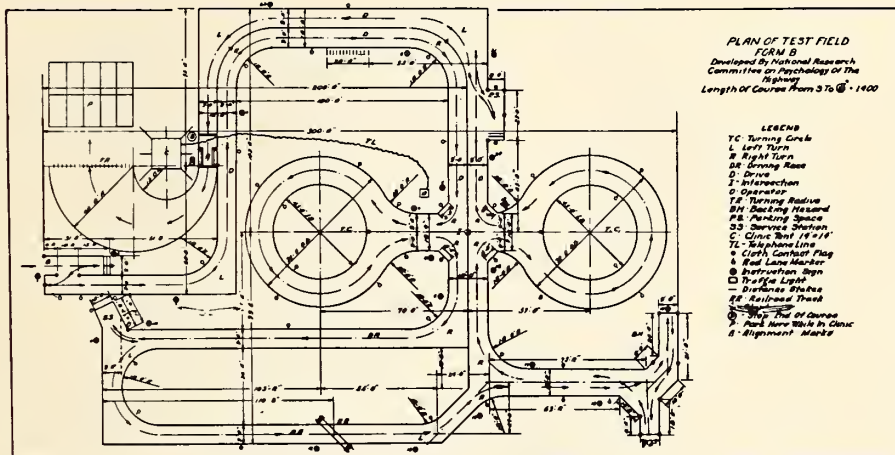
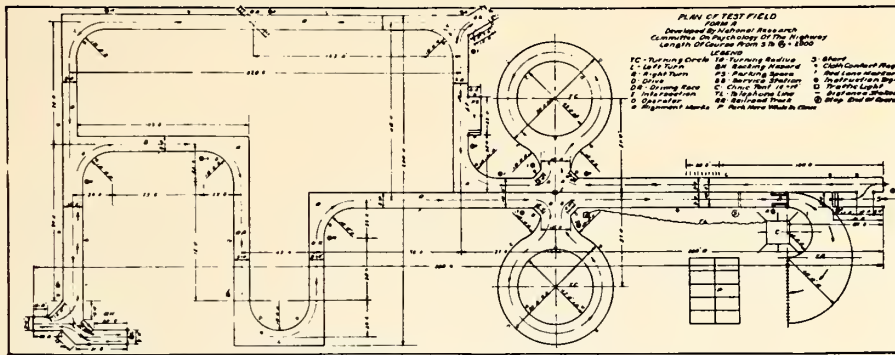
Score = 4 X number right _____

| Disk No. | A Viola- tion of State Law | B Dangerous Practice Only | C Wrong Situa- tion but no Violation | D Nothing Wrong | E What is Wrong? |
|----------|-------------------------------------|------------------------------------|---|-----------------------|------------------------|
| (1) | () | () | () | () | _____ |
| (2) | () | () | () | () | _____ |
| (3) | () | () | () | () | _____ |
| (4) | () | () | () | () | _____ |
| (5) | () | () | () | () | _____ |
| (6) | () | () | () | () | _____ |
| (7) | () | () | () | () | _____ |
| (8) | () | () | () | () | _____ |
| (9) | () | () | () | () | _____ |
| (10) | () | () | () | () | _____ |
| (11) | () | () | () | () | _____ |
| (12) | () | () | () | () | _____ |
| (13) | () | () | () | () | _____ |
| (14) | () | () | () | () | _____ |
| (15) | () | () | () | () | _____ |
| (16) | () | () | () | () | _____ |
| (17) | () | () | () | () | _____ |
| (18) | () | () | () | () | _____ |
| (19) | () | () | () | () | _____ |
| (20) | () | () | () | () | _____ |
| (21) | () | () | () | () | _____ |
| (22) | () | () | () | () | _____ |
| (23) | () | () | () | () | _____ |
| (24) | () | () | () | () | _____ |
| (25) | () | () | () | () | _____ |

6. Denger Modified Field
(For small area)

PLAN OF SPECIAL TEST FIELD





Driving Fields Iowa State College

Various types of driving fields have been used. Three fields for testing drivers developed at Iowa State College as a National Research Council Project were perhaps the first of this type to be carefully described and arrangements standardized. An early form of similar design was used by the Army during the first World War.

Later adaptations by Lane Technical High School, Iowa State College and more recently by Iowa State Teachers College. The latter is the most pretentious development so far as size is concerned. It is our belief that one can learn quite as well on a small field as more actual skill is developed in close-order maneuvers. The large driving range is useful in giving near-roadway driving practice.



Drivometer

This instrument is used for both testing and training. The controls are the same as found on a regular car, but the operation is slightly different.

An objective score is obtained in terms of, (1) time to complete a certain trip (six revolutions of the traveling roadway), (2) percentage of time the driver stays on the roadway, and (3) errors of observation, including proper reaction to signs, stop lights, and other stimuli presented mechanically in a standard fashion.

Those who have trouble getting used to steering and otherwise attending to the several things necessary to driving safely, can profit a great deal by special practice on this or similar apparatus. (Compare with devices used at early stage of training at Lane Technical High School in Chicago.)

F. Simple Aids for Use in Testing and Teaching Drivers.*

The fundamental theory of using test devices**for examining drivers is based upon the assumption that the testing device will accomplish one or more of the following results: (a) It will refine the methods used in selection of well-qualified drivers and thus improve the selected group, (b) It will apprise the individual driver of certain defects in special abilities in the area measured, (c) It will make him conscious of certain common errors and defects in driving or flying performance, and (d) it will motivate him to become a more efficient and a safer operator.

Various tests have been devised and have been used for this purpose. Some of them have not been adequately validated and standardized. Interpretation of results are at times not properly understood by those who use the devices. To be worthwhile a test must be (a) reliable and give approximately the same results each time it is given - assuming no change in directions given, and (b) it must measure something which has to do with the function it is designed to evaluate. This latter characteristic is called validity. Also, it must be (c) properly interpreted by those who make use of the results.

All tests of human capacities and abilities must measure one or more of the following psychophysical components or types of behavior:¹

- A. Sensory components or capacities and abilities such as vision, hearing, balance, muscle sense, touch, etc. In all, psychology recognizes ten or eleven senses.
- B. Central components or processes including intelligence, both specific and general, special aptitudes, attitudes and knowledge.
- C. Motor components, including speed of action, consistency in action, emotional stability, control of action, strength and endurance.

It is not essential to have elaborate and complex apparatus to make certain specific measurements; in fact, it is often desirable to use rather simple devices. The following instructions and the attached diagrams will illustrate a few of the simple devices for making auxiliary measures of importance in driving and flying. All the tests described here are reliable and valid for the purpose they were intended when properly given.

Color Vision Interpretation: In general, the Navy and Air Corps have been quite severe in exacting in selection of men with respect to color blindness.

Figure 1 is merely a copy of numbers on the plates used in the Ishihara test - 6th Edition. A much more reasonable interpretation of color blindness can be made by reference to this chart.

A very careful analysis of color-blind persons by means of a spectrophotometer, in which difference of intensity between the two bands was controlled, showed that about one out of thirty color-blind persons would confuse colored lights as used for signal purposes. The results showed that only those who missed the numbers in triangles shown on this interpretation chart would confuse colored lights. By using this chart for interpreting results from the Ishihara test a much finer and more accurate selection of men can be made. The chart is used by reference to the legend. (See Figure 1.)

Nuckolls*** Iowa Field of Movement Test:

Studies of several thousand drivers have shown a wider field for perception of movement by experienced football players and taxi drivers. It seems reasonable that formation flying would put considerable premium upon the ability to spot and place and note accurately moving objects in the periphery of vision. A field normal for both eyes will vary from

*Devices developed in the Engineering Experiment Station at Iowa State College in co-operation with the American Optometric Association.

¹For detailed discussion see "Methods of Measuring the Ability to Drive an Automobile." Bulletin #115, Engineering Ext. Service, Iowa State College.

**Courtesy New York Yearbook of Optometry.

***A further improvement is a piece of upright material over center to occlude the eye not being tested.

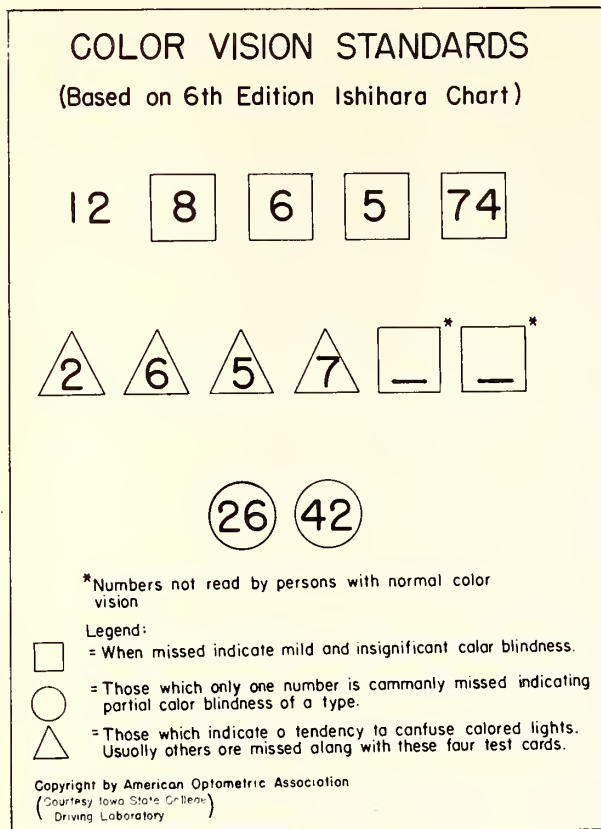


FIG. 1

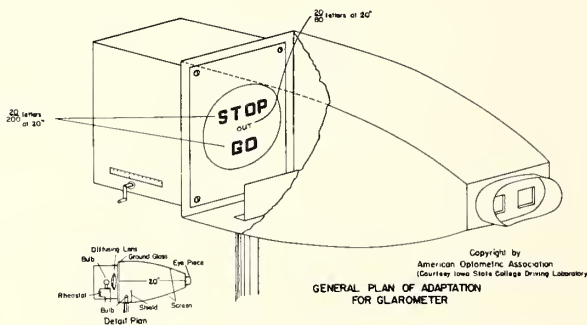
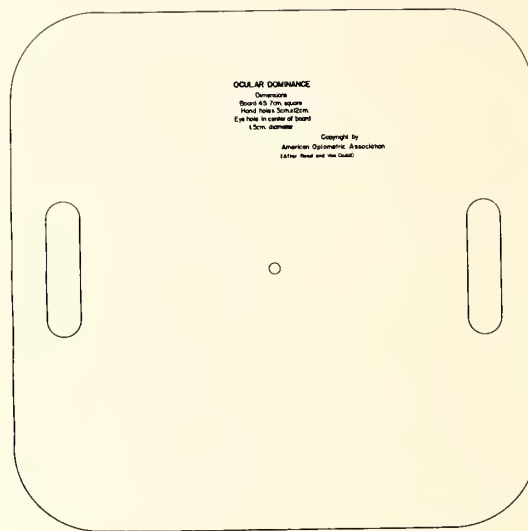
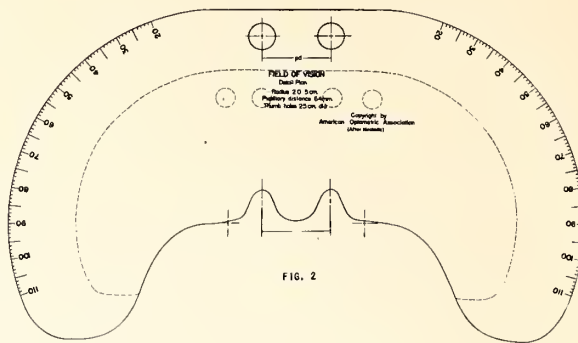


FIG. 4

180-190 degrees while some cases are found with a field up to 210 degrees. In rare instances the field may be constricted to a very narrow range - perhaps 10 to 15 degrees. In such pathological cases vision may be nearly normal in fovea or central area of retina. By measuring this field and calling the applicant's attention to its importance you place another very powerful defense weapon in his hand - heightened attention. It is our opinion that flyers should have at least a field of 180 degrees to start training. There is every reason to believe the field can be materially extended by systematic practice and stimulation. (See Figure 2.)

DIRECTIONS FOR CONSTRUCTION AND USE

Construct according to scale from light press-board not over $3/16$ " in thickness. The holes shown at the top are for thumb insertion and giving the test. It is so shaped as to fit along the face on the side to be measured. For left side measurements the examiner inserts his left thumb in the hole and raises the perimeter to a level plane and just below the eye. It must be carefully aligned so the protruding thumb will be directly in front of the eye. Now take a full length light blue or yellow pencil in the right hand and move along the edge of perimeter in a perpendicular position. About 3 inches of pencil should show above the perimeter. You are to give each examinee the following exact instructions: "Look directly at my thumb and tell me when you see movement on the left." Start from the back and move cautiously while moving pencil slightly until the examinee reports movement. Press pencil lightly against perimeter, lower and take reading to nearest degree. Make three such measurements for each side, carefully noting position or direction of line of vision. Caution the subject if he peeks and start over for that particular trial. There is a strong tendency for the eye to turn in the direction of the pencil. Make three such measurements and record each time. Take the mean of the three observations as the field of vision for one side. With a little practice a very reliable measurement can be obtained.

Eye Dominance - Reed-Van Osdal Test:

In every set of data we have collected, persons with right ocular dominance seem to be less disposed to accidents than those who are left-eye dominant. The reason can only be conjectured but is possible that in automobile driving more obstructions, vehicles, and pedestrians are experienced at close range on the right than on the left. That persons tend to use one eye only and do not "attend" with the other eye is common knowledge. Therefore, the effect seems to be that of lowered attention on the non-dominant side resulting in momentary or sustained psycho-blindness. (See Figure 3.)

DIRECTIONS FOR CONSTRUCTION AND USE

Cut the board out of $1/4$ to $5/16$ inch plywood or press-board. Cut hole in center and hand holes at side according to scale. (See small print under reading glass.)

To administer test have examinee hold up board and fixate some object a distance of from 5 to 10 feet. Give him these instructions, "Hold up this test board at arm's length and, with both eyes open, move it about until you can see the number 2 on my office door, (the door knob, or any other object). Tell me when you can see it by saying, "Now." At such time the examiner quickly places a small 3 x 4 card over one of the examinee's eyes and says, "Now do you see it?" If the subject says, "Yes", he is seeing it with the opposite eye. If he says, "No," you are covering the dominant eye. At least seven observations should be made per person, and the examiner should change sides for each observation to avoid suggesting the use of one eye or other. The results are recorded as R R L R L R L, etc., accordingly as the Trials are made and reported. Do not inform the examinee of your recordings or speak "right" or "left" aloud until he has completed the test. Those with marked ocular dominance should be told of the significance of the condition. (See Figure 4.)

Tolerance of Light. Modification of Glarometer.

Several methods of measuring light tolerance have been used.¹ The present adaptation of the Glarometer is recommended since many practitioners already have these devices and it has proved both reliable and valid for the purpose. The test can also be very quickly made. The secondary features of this adaptation may be varied but we recommend a literal duplication of the essential features which are; (1) Eye placed at distance of 20 inches from the ground glass and test letters, (2) Hood so made as to exclude all extraneous light, (3) Small illumination bulb placed behind shield between letters and eye to illuminate ground glass to about 2 foot-candles when flood bulb is off.

The box may be constructed of 1/2" pine sides with hard press board top and bottom. The eye piece was made to fit the forehead and exclude light coming from above and sides and to some extent from the bottom.

Four trials are usually given and averaged for the score. The crank should be turned one revolution per second as the examiner counts, 1-1000, 2-1000, 3-1000, etc. At the moment the subject reports OUT, snap off the flood bulb. Instruments may vary with the bulb used, age of bulb, and condition of the rheostat. It is necessary, therefore, to work out some calibration² system before standardizing your instrument. For method of standardization, see Lauer.³

The subject is allowed to adapt to indoor illumination for at least 5 to 10 minutes. He is placed before the instrument and given the following instructions: "This device is used to measure your tolerance of light. When you cannot read the word OUT say "Out". "Ready." Examiner then snaps on the flood light with indicator at zero and cranks rheostat at stated speed. Observe closely in order to stop instantaneously when subject reports. If incorrect keep crank moving until proper response is obtained. At such moment switch off flood light immediately. Record each trial as given. Examiner must be careful not to coast past the response point before reading is made. For presbyopic persons or those with very poor vision use large letters and deduct 10 per cent from readings.

The minimum and simplest recommended equipment for simple checks of drivers in practical situations consists of the following:

A. Sensory Components

1. Simple acuity of vision. Snellen chart at 20 feet.
2. Astigmatism. Snellen chart radiating lines or fan-dial.
3. Phorias - stereoscopic slide.
4. Glare tolerance. See Figure 4.
5. Field of vision. See Figure 2.
6. Ocular dominance. See Figure 3.
7. Color vision - Ishihara test as interpreted by Figure 1.

B. Central Components

1. Alertness to mechanical situation. Any good test.
2. Knowledge of good driving practices.
3. Knowledge of road laws.
4. Test of attitudes toward people and regulations.

C. Motor Components

1. Activity test.
2. Strength test. Also an index of endurance. Hand dynameter.
3. A coordination test.
4. A driving skill test.

¹Lauer, A. R., An Experimental Study of Glare Susceptibility. American Journal of Optometry, 1936, 8, No. 6, 200-207.

²Lauer, A. R., An Experimental Study of Glare Perceptibility. American Journal of Optometry, 1936, 8, No. 6, 200-207.

³Lauer, A. R., Methods of Measuring the Ability to Drive an Automobile Bulletin #115, Engineering Extension Service, Iowa State College.

G. Iowa State Multi-
Attitude Test

IOWA STATE MULTI-ATTITUDE SCALE

Form A

Edited by A. R. Lauer, Ph. D.

Name _____ Age _____ Sex _____ Education (yrs.) _____

Score X _____ Letter _____ Y _____ Letter _____ Z _____ Letter _____

Directions

This is a test of what you think of certain things. Read over the following words and give your first reactions to each. If the word meaning is very pleasing to you mark it 4, if it is somewhat pleasant mark it 3, if it is indifferent mark it 2, if it is displeasing mark it 1, and if most displeasing mark it 0. Thus:

- 4 = very pleasing, very pleasant or very agreeable.
 3 = pleasing, somewhat pleasant or agreeable.
 2 = indifferent, neutral or makes no particular impression.
 1 = displeasing, unpleasant or disagreeable.
 0 = most displeasing, very unpleasant or very disagreeable.

The following words would probably be marked by most persons as follows:

castor oil = 0

spring sunshine = 3

tree trunk = 2

Naturally most words will be marked differently by different persons. The following words will be given for your practice in using the numbers 0, 1, 2, 3, and 4 as given above. Place the proper number after each word to indicate your feeling concerning it.

carriage bolt ☐cozy home ☐being criticized ☐

You will most likely have the words marked in the squares as follows: carriage bolt 2, as it would not be likely to make any significant impression on a person. Cozy home has a very pleasant connotations and might be marked 4, while being criticized is annoying and will be marked by most people as 0. However, you may be different and your reactions are wanted on this sheet. You know how to use the list above, by placing the proper number in the square to indicate how the word appeals to you, now go through the following lists and place a number in each square to indicate the feeling you have toward this word. Do not omit any. Refer to the list above frequently so you do not forget the system. They are repeated here and at the bottom for convenience. WORK RAPIDLY.

4 = very pleasing

3 = pleasing

2 = indifferent

1 = displeasing

0 = most displeasing

- | | |
|---|--------------------------------|
| 1 | 1. labor union |
| 3 | 2. literature study |
| 1 | 3. police whistle |
| 2 | 4. U. S. detective |
| 4 | 5. music study |
| 0 | 6. alcohol |
| 2 | 7. trust companies |
| 2 | 8. Russian |
| 4 | 9. safety zone |
| 1 | 10. military training |
| 0 | 11. bootlegger |
| 2 | 12. government railway control |
| 4 | 13. universities |
| 2 | 14. fire plug |
| 2 | 15. Italian |
| 3 | 16. Masonic Lodge |
| 3 | 17. birth control |
| 4 | 18. scientific training |
| 3 | 19. Anti-saloon League |
| 3 | 20. driving behind lady driver |
| 2 | 21. five-day working week |
| 2 | 22. Greek |
| 4 | 23. Women's Temperance Union |
| 3 | 24. U. S. representative |
| 2 | 25. motor cop |
| 4 | 26. sacred music |
| 2 | 27. Secretary of Interior |
| 2 | 28. priest |
| 3 | 29. social fraternity |
| 2 | 30. U. S. senator |
| 2 | 31. Baptist |
| 1 | 32. communism |
| 2 | 33. basket ball |

- | | |
|---|------------------------------------|
| 2 | 34. racing car |
| 1 | 35. prize fight |
| 1 | 36. one-way street |
| 3 | 37. easy money |
| 1 | 38. boxing match |
| 1 | 39. mountain driving |
| 0 | 40. liquor parties |
| 2 | 41. side roads |
| 1 | 42. football |
| 4 | 43. church school |
| 1 | 44. politics |
| 0 | 45. light wines |
| 1 | 46. "political pull" |
| 3 | 47. old man |
| 2 | 48. Presbyterian |
| 2 | 49. Indian |
| 4 | 50. friendship |
| 1 | 51. card game |
| 3 | 52. 25-mile speed limit |
| 2 | 53. foreman |
| 3 | 54. old woman |
| 0 | 55. har tender |
| 3 | 56. hasehall |
| 3 | 57. make trips on schedule |
| 2 | 58. patrolman |
| 3 | 59. to be with others |
| 2 | 60. politician |
| 1 | 61. U. S. food control |
| 0 | 62. beer |
| 1 | 63. government farm board |
| 0 | 64. road house |
| 1 | 65. speedway |
| 3 | 66. school zone |
| 4 | 67. government control of aviation |

- | | |
|---|-----------------------------|
| 2 | 68. Chinaman |
| 0 | 69. saloon |
| 2 | 70. city detective |
| 4 | 71. hymn |
| 2 | 72. hamburger joint |
| 1 | 73. crossing-gates at R. R. |
| 3 | 74. 8-room house |
| 2 | 75. railway detective |
| 0 | 76. speak-easy |
| 4 | 77. college professor |
| 3 | 78. hospital zone |
| 2 | 79. Knights of Columbus |
| 3 | 80. Sunday School teacher |
| 4 | 81. fireplace in home |
| 0 | 82. hrandy |
| 3 | 83. 6-hour day |
| 2 | 84. Odd Fellows Lodge |
| 1 | 85. riding 70 miles an hour |
| 3 | 86. boulevard stop sign |
| 1 | 87. loud car horn |
| 2 | 88. county auditor |
| 1 | 89. organized labor |
| 3 | 90. velvet rugs |
| 3 | 91. love letters |
| 4 | 92. prohibition |
| 2 | 93. boss |
| 3 | 94. nun |
| 1 | 95. socialism |
| 3 | 96. traffic regulations |
| 3 | 97. voting |
| 3 | 98. driving slow in traffic |
| 0 | 99. bolshevism |
| 2 | 100. Jewish synagogue |

4 = very pleasing

3 = pleasing

2 = indifferent
END OF TEST

1 = displeasing

0 = most displeasing

H. References

There are a limited number of books on driving and driver training. The following major titles should be in every school library offering driving courses. Below are a number of references found in periodicals which may be obtained in reprint form or in pamphlets distributed by agencies cooperating to reduce accidents.

MAJOR REFERENCES

- Accident Facts. National Safety Council, 20 N. Wacker Drive, Chicago, Ill. An annual summary of accident statistics in all fields.
- Automobile Users Guide. Customer Research Staff, General Motors Corporation, Detroit, Michigan. A small booklet containing very valuable information for every driver.
- De Silva, Harry R. Why We Have Accidents. John Wiley and Sons, 1942, pp. 394+XVII. Contains resume of various studies on driving with suggestions for accident reduction on the highway.
- Dyke, A. L., Automobile and Gasoline Engine Encyclopedia. The Goodheart-Wilcox Co. Inc., Chicago, Ill., 1943. pp. 1483. A compendium of information relating to the automobile as a machine.
- Heitner, Shidle and Bissell, Elements of Automobile Mechanics. D. Van Nostrand Co. Inc., New York, N. Y., 1943. pp. 395. Excellent for those learning to drive.
- Kramer, Milton D., Behind the Wheel. Center for Safety Education, New York, 1944. pp. 38. Simplified step by step procedures for use of parents and learners.
- Man and the Motor Car. National Conservation Bureau, New York, N. Y. 1941, 287+XI. A textbook designed primarily for driver education or classroom instruction.
- Plans for Building Drivers' Tests. American Automobile Association, Pennsylvania Ave. at 17th St., Washington, D. C. 1947, pp. 27. Complete sets of blueprints and plans for making testing equipment for driving. It is laid out such that the school shop may do most of the construction.
- Sportsmanlike Driving. American Automobile Association, Washington, D. C., 1948, pp. 455 +XVI. A textbook on driving and driver training which appeals to the high school reader.
- Weiss, A. P. and Lauer, A. R., Psychological Principles in Automobile Driving. The Ohio State University Studies, Graduate School Series, Contributions in Psychology, No. 11, Columbus, Ohio. 1931, pp. 165 +VII. Basic research on the problems of driving. Suggestions for measuring drivers characteristics.
- Winter Accident Prevention. National Safety Council, Committee on Winter Hazards, Chicago, Ill., 1947, pp. 23.

MINOR REFERENCES

The following smaller articles, bulletins and pamphlets are of special value in certain phases of driving instruction. Many of them may be out of print but others may be reproduced from standard library periodicals.

- Age and Highway Accidents. De Silva, Harry R., Yale University Institute of Human Relations, New Haven, Connecticut, 1939, pp. 10.
- Alcohol in Relation to Traffic Accidents. The Journal of the American Medical Association. Reprints from Northwestern Traffic Institute, Northwestern University, Evanston, Ill., 1938, pp. 9.
- Fact and Fancy Regarding Driver-Testing Procedures. Journal of Applied Psychology, Vol. 21, pp. 173-188.
- Laws Governing Motor Vehicle Operation. Write your state motor vehicle department or commission and ask for copies distributed to prospective licensees.

- Learning to Drive. Lauer, A. R. Safety Education, Vol. 26, No. 2, Sec.I, pp. 10-12.
- Let's Teach Driving. National Commission on Safety Education of the National Education Association, 1201 Sixteenth St., N. W. Washington 6, D. C., 1947, pp. 119 +XV.
- Professional Driving. Ethyl Corporation, New York, N. Y. 1943, pp. 43.
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